S. HRG. 110–358

OIL INVENTORY POLICIES

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

SECOND SESSION

TO

RECEIVE TESTIMONY ON U.S. OIL INVENTORY POLICIES, INCLUDING THE STRATEGIC PETROLEUM RESERVE POLICIES

FEBRUARY 26, 2008

Printed for the use of the
Committee on Energy and Natural Resources

U.S. GOVERNMENT PRINTING OFFICE

41–997 PDF WASHINGTON : 2008

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2104 Mail: Stop IDCC, Washington, DC 20402–0001

COMMITTEE ON ENERGY AND NATURAL RESOURCES

JEFF BINGAMAN, New Mexico, *Chairman*

DANIEL K. AKAKA, Hawaii
BYRON L. DORGAN, North Dakota
RON WYDEN, Oregon
TIM JOHNSON, South Dakota
MARY L. LANDRIEU, Louisiana
MARIA CANTWELL, Washington
KEN SALAZAR, Colorado
ROBERT MENENDEZ, New Jersey
BLANCHE L. LINCOLN, Arkansas
BERNARD SANDERS, Vermont
JON TESTER, Montana

PETE V. DOMENICI, New Mexico
LARRY E. CRAIG, Idaho
LISA MURKOWSKI, Alaska
RICHARD BURR, North Carolina
JIM DEMINT, South Carolina
BOB CORKER, Tennessee
JOHN BARRASSO, Wyoming
JEFF SESSIONS, Alabama
GORDON H. SMITH, Oregon
JIM BUNNING, Kentucky
MEL MARTINEZ, Florida

ROBERT M. SIMON, *Staff Director*
SAM E. FOWLER, *Chief Counsel*
FRANK MACCHIAROLA, *Republican Staff Director*
JUDITH K. PENSABENE, *Republican Chief Counsel*

CONTENTS

STATEMENTS

APPENDIX

OIL INVENTORY POLICIES

TUESDAY, FEBRUARY 26, 2008

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 10:02 a.m. in room SD–366, Dirksen Senate Office Building, Hon. Jeff Bingaman, chairman, presiding.

OPENING STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

The CHAIRMAN. Why don't we go ahead and get started. Senator Domenici is on his way. I need to advise all witnesses which, unfortunately, we have, I believe it's going to be three votes that start at 10:10. We're not going to have to break right at 10:10, but about 10:20 we will have to break.

So, maybe we can get as many statements in as possible before then. Let me just make a very short statement here. Thank you for being here. Thanks to all the witnesses.

The purpose of this hearing is to discuss a critical aspect of our Nation's energy security, oil inventories and in particular, the strategic petroleum reserve. I'm concerned about the current policy to fill the SPR with royalty in kind oil from the Department of Interior regardless of market conditions. For that reason I have cosponsored Senator Dorgan's bill to essentially take a time out on filling SPR as we face the threat that Venezuela might suspend oil shipments to the U.S. It's more appropriate, in my view, for us to consider releasing oil from the SPR rather than filling it.

I'd also like to discuss the broader policy issues related to the Strategic Petroleum Reserve. The Administration has asked Congress for legal authority to double the size of the reserve to 1.5 billion barrels. Before we can consider such a request, I believe it would make sense to think first about our policy related to the SPR fill and drawdown. Second, think about whether simply increasing crude storage will truly enhance our ability to respond to oil supply disruptions.

Our Strategic Petroleum Reserve fill and drawdown policies are inconsistent across different Administrations. Sometimes they're inconsistent within Administrations. Perhaps it's time to consider adding more clarity to SPR policies so that the market can know what to expect during oil supply disruptions.

I'm concerned that the current Administration seems to have changed the long standing policy that originated in the Reagan Ad-

ministration which stated that in the case of a world oil supply disruption, the SPR would be drawn down early and in large volumes. The SPR policy enacted during the 1990 and 1991 Desert Storm Operation offered an example of this "early and large volumes" policy and action. The DOE observed that world oil markets remained remarkably calm throughout most of the war due largely to the swift release of the Strategic Petroleum Reserve oil.

Then Secretary of Energy Watkins noted, "We have sent an important message to the American people that their 20 billion dollar investment in an emergency supply of crude oil has produced a system that can respond rapidly and effectively to the threat of an energy disruption." In contrast, the current Administration has gone in a different direction deciding not to release SPR oil despite three nearly simultaneous oil supply disruptions in Venezuela, Iraq and Nigeria in 2003. In order to ensure that this large investment, it was worth 20 billion when Secretary Watkins was in office, but today it's worth more like 70 trillion, still responds effectively in the case of a disruption, we need to clarify the conditions under which SPR should be used. For a more technical level we need to discuss whether we should be adding more crude oil inventories or instead storing refined products; whether we should have the government own all of the oil or whether there are other more market friendly approaches to increasing our supply cushion.

The IEA has pointed out that the United States demand for refined petroleum products exceeds our refinery capacity. The agency therefore has recommended that we consider other policy options to enhance our response capability. Our Nation's energy security is too important to set on auto pilot, and the purpose of today's hearing is to determine what other course we might follow.

I know Senator Domenici is going to have an opening statement when he arrives. Let me just ask if either of my colleagues felt they'd want to make a statement right now. Do you want to start?

Senator BARRASSO. Just in the interest of time, Mr. Chair, I know you——

The CHAIRMAN. Yes.

Senator BARRASSO [continuing]. Have the committee voting in about 10 minutes. Senator Domenici is coming in.

The CHAIRMAN. Oh, good. Ok.

[The prepared statements of Senators Bingaman, Dorgan, and Murkowski follow:]

PREPARED STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

Thank you all for coming today to discuss a critical aspect of our nation's energy security: oil inventories and the Strategic Petroleum Reserve in particular. I am concerned about the current policy to fill the SPR with Royalty-in-Kind oil from the Department of the Interior, regardless of market conditions, which is why I am cosponsoring Senator Dorgan's bill to take a time out on filling the SPR. As we face the threat that Venezuela might suspend oil shipments to the United States, it is more appropriate for us to be considering releasing the SPR rather than filling it.

But I would also like to discuss broader policy issues related to the Reserve. The Administration has asked Congress for the legal authority to double the size of the Reserve to 1.5 billion barrels. Before we can even consider such a request, it seems to me that we need to think first about our policy related to SPR fill and drawdown, and second, think about whether simply increasing crude storage will truly enhance our ability to respond to oil supply disruptions.

Our SPR fill and drawdown policies are inconsistent across different Administrations, and sometimes within Administrations. Perhaps it is time for us to consider

adding more clarity to SPR policies, so that the market can know what to expect during oil supply disruptions. I am concerned that the current Administration seems to have changed the long-standing policy that originated in the Reagan Administration, which stated that in the case of a world oil supply disruption, the SPR would be drawn down early and in large volumes. The SPR policy enacted during the 1990-1991 Desert Storm operation offered an example of this "early and in large volumes" policy in action. DOE observed that "world oil markets remained remarkably calm throughout most of the war, due largely to the swift release of the Strategic Petroleum Reserve oil." Then-Secretary of Energy Watkins noted, "We have sent an important message to the American people that their $20 billion investment in an emergency supply of crude oil has produced a system that can respond rapidly and effectively to the threat of an energy disruption."

However, the current Administration gone in a different direction, deciding not to release SPR oil, despite three nearly simultaneous oil supply disruptions in Venezuela, Iraq, and Nigeria in 2003. In order to ensure that this large investment—worth $20 billion in Secretary Watkin's day, but more like $70 billion today—still responds effectively in the case of a disruption, we need to clarify the conditions under which the SPR should be used.

On a more technical level, we need to discuss whether we should be adding more crude oil inventories, or storing refined products; whether we should have the government own all of the oil, or whether there are other, more market-friendly approaches to increasing our supply cushion. The International Energy Agency has pointed out that U.S. demand for refined petroleum products exceeds our refinery capacity. The Agency therefore has recommended that we consider other policy options to enhance our emergency response capability.

Our nations' energy security is too important to set on auto-pilot. I hope that this hearing will help us to be more thoughtful about our emergency response capability.

PREPARED STATEMENT OF HON. BYRON L. DORGAN, U.S. SENATOR FROM NORTH DAKOTA

When it comes to the Strategic Petroleum Reserve (SPR), the Administration's policy has been to say let's "top it off" I want to be clear that we have a major difference of opinion. My view, and that of many of my colleagues, is that we need to take a timeout from filling the SPR.

With oil trading at record highs and supplies tightening, it makes no sense to me why this Administration wants to continue removing oil from the market and sticking it underground. The SPR is more than 96 percent full. We are meeting our international treaty obligations for oil inventories from public and private oil stocks. DOE's own figures show that we have about 118 days of import protection, which is more than our 90-day requirement.

Oil has been trading at over $100 per barrel for a number of days in 2008. OPEC is expected to cut production again. Excess speculation is distorting market fundamentals and driving up the price of a barrel. We heard testimony before the Energy Subcommittee from an oil industry expert at Oppenheimer that excess speculation may be adding as much as $30 to the price of a barrel of oil.

Keeping oil on the market, instead of putting it underground, will put some downward pressure on oil prices and help ease the pain consumers are feeling at the pump.

However, the Administration continues to maintain that removing oil from the market and storing it underground does not impact on the oil prices. The Department of Energy has supposedly done an internal analysis that says that there is little to no major market impact because this is such a small portion of global daily use. I have not seen this analysis. I am not certain whether it has been peer-reviewed or even if it is available to the public.

I would like to know whether the Administration has a determined price threshold that would reverse its SPR fill policy. Is it oil trading at $120/barrel per barrel? Is it $3.50/gallon gasoline? When will they say filling the reserve becomes cost prohibitive?

Along with a price threshold, I would also like the Administration to provide to the Congress the total costs for filling the SPR today or the potential costs of their long-term plan to fill the SPR to the 1.5 billion barrel level.

We must further examine the near- and long-term use of precious federal resources to make our nation more energy secure. I am convinced that filling the SPR at this time is not the best way to direct resources toward our national energy priorities.

Congress recently passed major energy bills to address our challenges including the Energy Policy Act of 2005, the Gulf of Mexico Energy Security Act of 2006 and the Energy Independence and Security Act of 2007. These are important steps, but much more needs to be done.

This Administration continues to short-change funding for critical energy programs, but they have no problem filling the SPR with $100/ barrel oil. This makes no sense to me.

I want to be clear that I do believe the SPR is an important asset for our nation's economic and national security interests. But I also believe that we need to look at other alternatives rather than just "topping it off" at any price.

For these reasons, I introduced S. 2598, the Strategic Petroleum Reserve Fill Suspension and Consumer Protection Act of 2008. I very much appreciate the support of Senators Bingaman, Collins, Kerry, Wyden, Levin, and Lieberman who have joined me as original cosponsors, and I certainly welcome others as cosponsors.

This legislation is very simple: It would suspend filling the Strategic Petroleum Reserve for one year unless the price of oil drops below $50 per barrel during the remainder of 2008. This includes both purchasing oil for the reserve and filling the reserve with oil from royalty-in-kind contracts or any other means of acquisition.

As I said earlier, the reserve is at least 96 percent full. The current capacity is 727 million barrels of oil. The current inventory is about 700 million barrels. The Administration has gone forward and recently awarded three contracts to Shell Trading Co., Sunoco Logistics, and BP North America to fill an additional 12.3 million barrels of oil over the next six months. My understanding is that they may offer contracts later this year to fill 125,000 barrels per day for an amount of time.

I am particularly concerned that the DOE is removing highly sought after light sweet crude from the market. We heard testimony on November 12, 2007 from Dr. Philip Verleger before a joint hearing between the Energy Subcommittee and Homeland, Government Affairs Permanent Subcommittee on Investigations that indicated the Administration's policy could be adding as much as $10 to the price of a barrel of oil.

Dr. Verleger went onto make the point that this volume of light sweet crude that they want to put into the SPR may have only been 0.3 percent of the total global supply available, but it was adding at much as 10 percent to the price of light sweet crude. Yet, DOE still claims that their policy has no economic impact on the price of oil.

I believe it does and we need to take a timeout from filling the SPR to help stabilize energy prices.

Mr. Chairman, I think that this hearing is very timely, and I hope to work with you and other colleagues in the Senate to reverse this wrongheaded, senseless approach.

PREPARED STATEMENT OF HON. LISA MURKOWSKI, U.S. SENATOR FROM ALASKA

Mr. Chairman, thank you for holding this oversight hearing on the workings of the nation's Strategic Petroleum Reserve (SPR). I would like to express my clear support for expanding the size of the nation's hydrocarbon reserves, while also expressing some willingness to see the government show more flexibility on when it deposits oil into the SPR.

Following the 1973 Arab oil embargo, the United States wisely chose to utilize salt caverns in Louisiana and Texas and fill them with oil to provide the nation with strategic energy stockpiles in the event of import supply disruptions, whether caused by politically induced boycotts or naturally induced hurricanes or earthquakes.

Currently the Strategic Petroleum Reserve contains about 699 million barrels of oil stored in four salt caverns: the Bryan Mound and Big Hill reserves in Texas and the West Hackberry and Bayou Choctaw reserves in Louisiana. Congress in 2005 already authorized the expansion of the four existing sites, plus the development of a new 160 million barrel reserve, likely to be located at Richton in Mississippi, in order to increase the reserve to hold up to 1 billion barrels from the 727 it currently can hold. The President last year proposed that the size of the reserve be increased still further to 1.5 billion barrels by 2026.

Under U.S. commitments to the International Energy Agency that were the outgrowth of G-8 discussions after the 1973-74 embargo, America and all G-8 nations are required to hold petroleum inventories equal to 90 days of (net) oil imports. Since the commercial reserves held by private firms continue to decrease relative to U.S. needs, the size of the nation's strategic reserves needs to increase. According to the EIA by 2010 we will have only 61 days of oil import protection from the 727

million barrels in the four existing caverns. Even proceeding with the expansion to 1 billion barrels will only provide the nation a 62-day supply given the nation's likely increased consumption of petroleum by 2030. We will continue to have to encourage private companies to maintain a 30-to 60-day commercial inventory supply just to meet our international commitments.

But maintaining and expanding the Strategic Petroleum Reserve is required not just to maintain our commitment to the International Energy Agency. It is important if we are to protect the nation's military and economic security. Currently this nation produces about 5.2 million barrels of oil a day. While EIA predicts that today's high prices may edge production back to a peak of 6.4 million barrels a day by 2020, our consumption is nearly 21 million barrels a day and is expected to hit nearly 25 million barrels a day by 2030.

Thus it is clear that we need to improve and expand SPR, not curtail its operations. Our existing SPR can pump only about 4.4 million barrels of oil a day out of the salt caverns and into pipelines to head to refineries. That ability needs to continually expand in order for our stored oil to be readily available to help maintain our economy in the event of energy import disruptions. We also need to consider funding expansions of refined product reserves, not just for the Northeast, but for the West Coast and Southwest. Given the nation's pipeline network limitations, it takes only 5 or 6 days to move SPR oil to Midwestern refineries and 6 to 8 days to move SPR oil by tanker to East Coast refineries, but 16 to 18 days to move oil to the West Coast via the Panama Canal. It is important that we plan and install new ways to store reserves of both crude oil and refined products on the West Coast and add to the Northeast heating oil reserve so that we can store more refined products for East Coast use. The effects of 2005's Hurricanes Katrina, Rita and Wilma all show that speading our reserves around geographically would make excellent sense from a strategic standpoint.

The need for West Coast oil was one of the reasons that last year I and my Alaska colleague Senator Ted Stevens proposed opening the Arctic coastal plain to oil development, but moving the federal share of the oil that would be produced into a new Strategic Petroleum Reserve. That would allow us to expand our oil stockpiles without hurting current market supplies or prompting price hikes for oil. I still hope to convince Congress of the economic and supply benefits of classifying part of the Alaska's reserves in the Arctic National Wildlife Refuge for deposit in a SPR.

So I support continued funding to expand the physical size of the SPR. But I am willing to listen to arguments for permitting oil to be deposited into the SPR only when prices are below last week's $100 per barrel price. While we don't actually pay money for oil—we simply divert the U.S. royalty share of Gulf of Mexico oil production into SPR—putting that oil into the reserve takes oil that could go onto world markets to help drive down prices out of general circulation. Even though the amount of oil, 70,000 barrels a day is so small that it likely has little effect on prices, depositing that oil in SPR certainly does little to reduce high prices.

So it does make sense to fill the SPR more slowly when prices are high so that more of the U.S. royalty share of oil goes to markets to help put some slight pressure to drive down prices. While I do not support passing a statute that prohibits deposits unless oil prices are less than some set threshold, it does make sense to suspend oil deposits and to sell government oil on the open market to help psychologically reduce prices at times of extremely high prices and significant price volatility.

I expect this hearing to give us better guidance on how to suggest to the Department of Energy on when to acquire oil for SPR and when to stop pumping new oil into the reserve. While oil prices aren't likely to return to the $10 per barrel prices of two decades ago, they certainly are likely to fall from the current $90 to $100 per barrel price. And as we all know it is better to buy low, than to buy high.

I look forward to the expert testimony and advice we are to receive today to help us craft a better oversight policy for SPR acquisitions and storage efforts. Thank you Mr. Chairman.

STATEMENT OF HON. LARRY CRAIG, U.S. SENATOR FROM IDAHO

Senator CRAIG. Mr. Chairman, while the Senators are being seated, can I make just a few comments?

The CHAIRMAN. Sure.

Senator CRAIG. I'm not in disagreement with you as it relates to a consistent policy. Last week with the explosion of the refinery in Texas, oil hit $100 a barrel. Who says $70 and $80 and $90 barrel

oil may not be a bargain today based on what it could be out there in the future.

What we did in, you know, EPACT with bumping it up to a billion barrels instead of the 699 million we have now probably is the right and reasonable cushion. We may never reach that goal if we set the target at $50 a barrel. But having said that let me suggest that there's another way of looking at this.

If we took 10 million out of the SPR money and did the kind of responsible inventory of offshore reserves today. That we know are out there, but we don't have a contemporaneous, modern inventory and analysis of where they all are. That might be the greatest SPR for our country that we could possibly have. We know the fights involved in all of that and so the easy way out is to buy expensive oil and stick it back in the ground. What about the less expensive oil that's already out there in the ground that we ought to inventory and modernize to know what our country has available to it.

There are a lot of ways of looking at this. I suggest the greatest pro is in the Gulf. It's in ANWR. It's in off our East and West Coast. But none of us want to go there. We want to fight over a reasonable cushion of security of a billion barrels and a refinery capacity that in a short run or at least in the case of the explosion, in Texas, that takes a refinery off line for a time, causes a spike in the market.

I guess that's my concern. I can see the need of consistency. I can also see the need of security and the greater security is not in SPR, it's in tapping our own reserves. Thank you.

The CHAIRMAN. Senator Domenici, did you want to make a statement at this point or do you want me to go right to the witnesses? What's your preference?

STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM NEW MEXICO

Senator DOMENICI. I prefer that you go on. I just wanted to comment on your statement that we don't want to proceed with the offshore resources and the like. I want the record to show that that plural "we" didn't apply to me, cause I do.

The CHAIRMAN. I'm talking about a collective "we'll" in this context. That's right.

Senator DOMENICI. I've already tried and we've succeeded a little bit.

The CHAIRMAN. That's right.

Senator DOMENICI. We've got to try some more. Instead of doing this we ought to have another bill. I'll put my prepared statement in the record and might use it in the questions.

Senator DOMENICI. But for the purposes of where we are, I don't agree with the bill that suggests that we ought to stop putting oil in SPR because of the current price. Thank you, Mr. Chairman.

[The prepared statement of Senator Domenici follows:]

PREPARED STATEMENT OF HON. PETE V. DOMENICI, U.S. SENATOR FROM NEW MEXICO

Welcome. I want to thank our panel of witnesses for taking time out of their busy schedules to join us today. Your testimony will be invaluable as we look into the United States' oil inventory policy, specifically the policy related to the Strategic Petroleum Reserve (SPR).

In the last year, oil prices have increased nearly 60% because of geopolitical instability, a lack of additional refining capacity, and the tightness of the global market. Despite the increase in oil and petroleum costs, the Energy Information Administration (EIA) in its 2008 Energy Out look expects world oil consumption to rise 0.6% and the total U.S. petroleum consumption to increase 1.0% in 2008.

Recently, there has been concern surrounding SPR fill activity because of high oil prices. However, the fill rate of the SPR is 70,000 barrels a day, which is less than one tenth of one percent of U.S. daily consumption and between one sixteenth and one ninth of one percent of world oil consumption, which is reaching approximately 90 million barrels per day. Therefore, the fill activity is having a minimal impact on the market and has done little to increase world oil prices.

Almost everyone agrees that we should have a SPR, but there has been controversy since the 1980's surrounding the purpose of the SPR and how the reserve should be used and managed.

The U.S. established the SPR as a result of the Arab Oil Embargo by the Organization of Petroleum Exporting Countries (OPEC), which reduced crude oil production and caused economic disruption to the U.S. The original intent of the SPR was to discourage the use of oil as a political weapon and to be used during temporary oil supply disruptions.

Our nation's future energy security is tenuous because the U.S. continues to increase petroleum consumption while our domestic production is leveling off. The result is a greater dependence on foreign oil year after year. Additionally, there is an increase in political instabilities within oil producing countries like Nigeria and Venezuela, and the presence of terrorist activities in the Middle East increases the potential risk to OPEC production. Not to mention acts of nature such as hurricanes.

The SPR's current capacity is 727 million barrels, it has an inventory of 698 million barrels and a drawdown ability of 4.4 million barrels a day for the first 90 days; and thereafter the rate would begin to decline. Therefore, filling and expanding the reserve is necessary to strengthen the long-term energy security of the United States. The SPR is not intended to affect oil prices. It is a national security asset.

Mr. Chairman, I appreciate your willingness to hold this hearing and examine the SPR inventory policies. But this is also an opportunity to recognize the fact that we should focus on expanding access to new domestic sources of oil. As you know I would like to see development increase on the outer continental shelf. And I am hopeful that we will not revise the wise policies of advancing research and development and commercial production of oil shale.

As Recent studies by the Department of Interior estimate that federal lands have more than 20 billion barrels of untapped oil and another 20 billion in federally restricted offshore areas. This amount of federally restricted domestic resources is 100 times more than the amount in the SPR. As prices continue to rise and we ship nearly $400 billion annually overseas to import oil-it is essential that we re-exam our domestic production policies.

I look forward to hearing from today's witnesses, and, going forward, to working with the members of this Committee on this serious matter. Thank you.

The CHAIRMAN. Alright. Why don't we get started on the statements? As I indicated about 10 minutes into the first vote we'll just stop wherever we are and return after what I think will be three votes.

Our witnesses—let me introduce them all here. Katharine Fredriksen, who is the Principal Deputy Assistant Secretary in the Office of Policy and International Affairs in the Department of Energy, thank you for being here. Frank Rusco, who is the Acting Director for the Natural Resources and Environment area in the GAO. Frank Verrastro, thank you for being here. He's the Director and Senior Fellow with Energy and National Security Program for the CSIS, the Center for Strategic and International Studies here in Washington. Melanie Kenderdine, who is the Associate Director for Strategic Planning at the MIT Energy Initiative in Cambridge, thank you for being here.

Ms. Fredriksen, why don't you go right ahead?

STATEMENT OF KATHARINE FREDRIKSEN, PRINCIPAL DEPUTY ASSISTANT SECRETARY, OFFICE OF POLICY AND INTERNATIONAL AFFAIRS, DEPARTMENT OF ENERGY

Ms. FREDRIKSEN. Thank you, Mr. Chairman, members of the committee. It's my pleasure to appear before you today to discuss the importance of the Strategic Petroleum Reserve and its role in providing energy security to our Nation.

Our energy security is directly intertwined with our national security. In fact we are in a time of great risk when it comes to both realities. Global energy consumption will continue to increase by roughly 50 percent by 2030 with oil projected to remain the single largest source of that energy.

Oil resources are often located in places that are geographically hard to reach, difficult to develop and politically unstable or unfriendly to new, foreign investment. Record high oil prices reflect that growing global demand, the limited spare to production capacity due to insufficient investment, a similar lack of investment in exploration and rising development costs. In 2006 the United States imported over 12 million barrels of petroleum a day accounting for roughly 60 percent of our daily consumption.

Although you must answer today's question on reserve capacity, we must also confront the question of tomorrow. That is how to reduce our dependence on fossil fuels. We must as a global leader in the world and the world's largest energy consumer, fundamentally transform the way the world produces and consumes energy.

We must expand and diversify our supplies and our suppliers, increase our efficiency, modernize and expand our infrastructure and improve our environmental stewardship. We must confront the reasons why we are dependent on foreign oil. How we can mitigate these circumstances including increasing our own domestic exploration and production.

Despite the concern about reliance on foreign oil this Nation continues to forgo available self help, the tremendous resources available in ANWR and the vast majority of the outer continental shelf. The Department is continually working to develop alternative energy sources and to improve our existing energy infrastructure. Only by confronting our energy security, in its entire context, can we properly make decisions on our national reserves and their critical importance to our Nation in times of natural or unnatural emergencies.

In looking at the two emergency drawdowns in the SPR's history, it is clear that this tool was vital during both events, whether as a result of a global conflict like Operation Desert Storm or a natural disaster such as Hurricanes Katrina and Rita where approximately 25 percent of our Nation's refining capacity was impacted. Our reserves were critical in these periods. They were immediately put into action.

The conversation should not focus on whether the Strategic Petroleum Reserves serve a significant role in our energy security because it unquestionably does, as our Nation's one and only insurance policy against global supply disruption. The conversation should also not focus on whether the Reserve serves its purpose as America's fulfillment to our international treaty commitments as agreed to under the agreement for International Energy Program

under the IEA charter because we do. The conversations should instead focus on a shared philosophy to increase the capacity of the Reserve and answer the President's call in his 2007 State of the Union Address to double that Reserve to 1.5 billion barrels.

This conversation is imperative. It needs to be addressed so that the United States has the appropriate and vital layer of protection it needs to ensure that adequate energy supplies are available to the American people in the case of a severe supply disruption. Our energy and national security concerns must be paramount. One might argue that the macro economic shock from a severe supply disruption is greater when oil is at $100 per barrel then when it is at $50 or even $20 per barrel. Thus the protection provided by the SPR is even more imperative.

As of today the SPR has an inventory of approximately 699 million barrels of its current capacity of 727 million barrels. In the case of a severe supply disruption that accounts for approximately 58 days of U.S. petroleum imports based on the EIA's import information. By law the SPR may be used if the President has determined that a severe supply disruption has occurred that threatens the economic security of the United States or it can use it in fulfillment of international treaty obligations.

By the end of March 2008, we expect the SPR inventory to reach 700.7 million barrels, the highest volume to date. That was the level reached just before Hurricane Katrina. As a result of the damage to production and refining from those hurricanes, President Bush issued a finding of severe energy supply emergency.

Short term loans totaling 9.8 million barrels were executed. The IEA then authorized a 60 million barrel drawdown to counter the effects on the global market of which the U.S. was obligated to offer 30 million barrels to the market. This resulted in the competitive sale of 11 million barrels.

The loaned oil has been replaced. It was done in May 2007. The sold oil has not yet been repurchased.

According to the IEA in September of last year, our total oil stocks in the U.S. including the SPR roughly equate to 120 days of net imports or about 80 days of our consumption. There are no compulsory stock requirements for oil companies in the United States. The number of days of net import protection the SPR inventory provides has significantly declined since the end of 1985. Import dependency has steadily risen from 30 percent of demand in 1985 to approximately 60 percent in 2004.

The SPR's net import coverage has fallen from a high of 118 days at the end of 1985 to a range of approximately 55 days in recent years. Increases in the SPR volume since 2001 have interrupted that downward trend as can be shown from the graphic. Oil initially purchased for the SPR was chosen to represent the crude that are processed by our refineries.

Seven categories of crude were used to define the crude quality for acquisition. But in order to achieve the required site drawdown rates it was necessary to co-mingle similar sweet crudes in storage. Today the SPR maintains only two segregations of oil types: one sweet and one crude, or one sour.

Light crudes were selected because they offer several significant advantages in the event of a crude import disruption. First they

can be refined or processed by all refineries from the simplest to the most complex. They are the easiest crudes to refine requiring only the basic refinery processing units. They don't require any of the desulfurization equipment, vacuum distillation, cat cracking or cooking units to handle the heavy bottoms.

Second, most refiners can use light crudes to increase or maximize their refinery output of light distillate. This is especially important when refined product exports have been disrupted. Light crudes will produce the maximum volume of gasoline and naphtha. A barrel of light crude will yield more gasoline and naphtha in the refining than a barrel of medium or heavy crude will.

In 2005 we conducted a comprehensive crude compatibility study of the current SPR crude oil streams. In general the crudes currently stored are compatible and desirable for the majority of the U.S. refineries and are well suited to mitigate supply disruptions. There are however, 11 of the 150 refineries in the U.S. which are specifically configured to process heavy crude oil that will be impacted in the event of a disruption of foreign crude supplies. They would still be able to process a limited supply or quantity of crude oil from the SPR and still maintain——

The CHAIRMAN. Could you go ahead and sort of summarize your comments? They're running longer than we had expected.

Ms. FREDRIKSEN. No problem, sir. It's a very difficult topic. I appreciate your patience.

I will close by saying that the expansion of the SPR is essential to meeting our future energy security needs. It is our intent to increase the level of import protection stored in the SPR as expeditiously as practicable. It is important to remember that the SPR is a government asset.

A total of $19.4 billion in Federal funding has been provided for acquisition of SPR. Based on current market prices that inventory is valued at $62.8 billion based on a $90 per barrel assumption. The amount currently being placed in the SPR of 70,000 barrels per day of royalty in kind oil is less than one-tenth of 1 percent of the daily global demand of 85 billion barrels per day and is well within producers existing excess production capacity.

This modest fill rate does not put undue pressure on markets. The EIA, the IEA and the Cambridge Energy Research Associates have repeatedly stated that global oil demand grows and reduce commercial inventories have created the tightness on the markets, not the modest SPR fill rate. Democrat and Republican Presidents, Democrat and Republican led Congresses, the 27 member nations of the IEA, as well as China and India, all recognize the need for a strong Strategic Petroleum Reserve.

In 2005 Congress passed and the President signed into law the expansion of the SPR to one billion barrels. We must remain on course to protect our energy and national security. I will be happy to answer any questions. I thank you for this completes my oral testimony.

[The prepared statement of Ms. Fredriksen follows:]

PREPARED STATEMENT OF KATHARINE FREDRIKSEN, PRINCIPAL DEPUTY ASSISTANT SECRETARY, OFFICE OF POLICY AND INTERNATIONAL AFFAIRS, DEPARTMENT OF ENERGY

Mr. Chairman, members of the Committee, it is my pleasure to appear before you today to discuss the Strategic Petroleum Reserve (SPR) and its important role in providing energy security to the United States.

ENERGY SECURITY

Our Nation's energy security is directly intertwined with our national security. In fact, we are in a time of great risk when it comes to both realities. Global energy consumption will increase by roughly 50 percent by 2030, with 70 percent of that growth coming from the world's emerging economies. While oil's share of total energy use is projected to decline, it is projected to remain the single largest source of energy through 2030, with oil increasing in absolute terms. Oil resources are often located in places geographically hard to reach, difficult to develop and politically unstable, or unfriendly to new foreign investment, superior technology, and modern business practices of international energy companies.

Record high oil prices reflect growing global demand, limited spare oil production capacity due to insufficient investment in producing new supply, lack of investment in exploration and rising development costs. In 2006, the United States imported over 12 million barrels of petroleum a day, accounting for roughly 60% of our daily consumption.

Although we must answer today's question on reserve capacity, we must also confront the question of tomorrow, which is how to reduce America's dependence on fossil fuels to begin with? We must, as a global leader, fundamentally transform the way the world produces and consumes energy. We must expand and diversify our energy supply and our suppliers, increase our energy efficiency, modernize and expand our infrastructure and improve our environmental stewardship.

We must confront the reasons we are dependent on foreign oil, and how we can mitigate these circumstances, including increased domestic exploration and production. Our domestic exploration has nearly bottomed out. Despite all the concern about reliance on foreign oil this Nation continues to forego available self help: the tremendous resource available in ANWR and the vast majority of the Outer Continental Shelf. The Department is continually working to develop alternative energy sources and improve our existing energy infrastructure and eliminate the road blocks to that progress.

Only by confronting our energy security in its entire context, can we properly make decisions on our national reserves and their critical importance to our Nation in time of natural or unnatural emergencies. In looking at the two emergency drawdowns in the SPR's history, it is clear this vital tool was essential during both events, whether as the result of a global conflict like Operation Desert Storm, or a natural disaster, such as Hurricanes Katrina and Rita where approximately 25 percent of our Nation's refining capacity was impacted. Our reserves were critical in these time periods and were immediately put into action.

The conversation should not focus on whether the Strategic Petroleum Reserve serves a significant role in our energy security, because it unquestionably does as our Nation's one and only insurance policy against global supply disruption. The conversation should also not focus on whether the Reserve serves its purpose as America's fulfillment of its international treaty commitments, as agreed to in the Agreement for an International Energy Program, because we do. The conversation should instead focus on a shared philosophy to increase the capacity of the Reserve, and answer the President's call in his 2007 State of the Union address to double it. This conversation is imperative and needs to be addressed so that the United States has the appropriate and necessary layer of protection it needs to ensure that adequate energy supplies are available to the American people in the case of a severe supply disruption. Our energy and national security concerns must be paramount.

BACKGROUND

In response to the 1973 Arab oil embargo, Congress enacted the Energy Policy and Conservation Act (Public Law 94-163) to establish the SPR. It was authorized in recognition of the long-term dependence of the United States on imported crude oil and petroleum products and the protection that a national petroleum stockpile would provide in the event of future severe supply interruptions.

As of today, the SPR has an inventory of 698.6 million barrels of its current capacity of 727 million barrels. In case of a severe supply disruption, that accounts

for roughly 58 days of U.S. petroleum imports based on Energy Information Administration (EIA) historical import information. By law, the SPR may be used if the President determines that a severe oil supply interruption has occurred that threatens the economic security of the United States or in fulfillment of international treaty obligations.

CURRENT STATUS

By the end of March 2008, we expect the SPR inventory to reach 700.7 million barrels, the highest volume to date. That was the level reached just before Hurricane Katrina devastated the Gulf Coast area in 2005, triggering a complete shutdown of production and extensive damage to the refining and distribution facilities in the region. As a result, President Bush issued a finding of a severe energy supply emergency. Short-term loans (or time exchanges) totaling 9.8 million barrels were also executed. The International Energy Agency (IEA), then authorized a 60 million barrel drawdown to counter the effects on the global market, of which the U.S. offered to obligate approximately 30 million barrels to the market. This resulted in the competitive sale of 11 million barrels. The loaned oil and accompanying premium barrels were replaced by May 2007.

According to an IEA Report published in September 2007, total oil stocks in the U.S. currently, including the SPR, roughly equal to 120 days of net oil imports, or about 80 days of total consumption. There are no compulsory stock requirements for oil companies in the United States. The number of days of net import protection that the SPR inventory provides has significantly declined since the end of 1985. Import dependency has steadily risen, from 30% of demand in 1985 to approximately 60% in 2004. The SPR's net import coverage has fallen from a high of 118 days at the end of 1985 to a range of approximately 55 days in recent years. Increases in the SPR volume since 2001 have interrupted the downward trend.

IEA COMPLIANCE

The United States is a founding member of the International Energy Agency (IEA). The IEA was formed with the understanding that the energy security of the oil consuming and producing nations is interdependent. Member countries must maintain the equivalent of 90 days of net oil imports as emergency reserves and take cooperative action in the event of a severe oil supply interruption. The IEA currently has 27 member countries and we are working to encourage other countries such as China and India to establish strategic reserves and manage them in accordance with IEA principles. Expanding IEA membership and promoting the establishment and implementation of IEA best practices support the ongoing mission of the SPR.

The United States' obligation as a signatory to the International Energy Program requires that we: (1) hold emergency stocks equivalent to at least 90 days of net oil imports (which can be met through reliance on government owned, commercial or both), and (2) release stocks and share available oil in the event of a major supply disruption. The Agreement on an International Energy Program (the Charter of the IEA) carries the commitment and status of a treaty. The U.S. SPR alone represents roughly 46 percent of total IEA strategic reserves.

While committed to the principles of the free market, we believe that it is the responsibility of the U.S. Government to ensure energy supply for the Nation and fulfill its commitment to the IEA. The most effective deployment of a strategic petroleum reserve is guaranteed by maintaining Government-owned and operated stocks. It is the policy of the Administration that the SPR be used only for severe supply emergencies and not for price or market manipulation.

Oil initially purchased for the SPR was chosen to represent the crudes being processed by U.S. refineries. Seven categories of crude were used to define the crude quality for acquisition. However, in order to achieve the required site drawdown rates, it was necessary to commingle similar sweet crude types in storage. Today, the SPR maintains only two oil segregations in storage at its sites. One is sweet crude, which has a sulfur content of no greater than 0.5 percent. The second is sour crude with a higher sulfur content of approximately 1.4 percent. Both crude types are classified as light oil having an American Petroleum Institute (API) gravity that ranges from 30 to 37 degrees.

Light crudes were selected because they offer several significant advantages in the event of a crude import disruption. First, light sweet crudes can be refined or processed by all refineries, from the simplest to the most complex. Light crudes are the easiest crudes to refine, requiring only the basic refinery processing units. They do not require all the desulphurization equipment and vacuum distillation, cat cracking, or coking units to handle the heavy bottoms. Second, most refiners can use

light sweet crudes to increase or maximize their refinery output of light distillates. Sweet crudes can be used by many refineries to increase refinery utilizations beyond normal levels. This is especially important when refined product exports have been disrupted—light crudes will produce the maximum volumes of gasoline and naphtha. A barrel of light crude will yield more gasoline and naphtha in refining than a barrel of medium or heavy crude would. This is important to the U.S. whose transportation system and economy is so highly dependent on gasoline.

In 2005, the SPR conducted a comprehensive Crude Compatibility Study of the current SPR crude oil streams. In general, the crudes currently stored in the SPR are compatible and desirable for the majority of the U.S. refineries and are well suited to mitigate most supply disruptions. There are, however, eleven refineries of the 150 in the U.S. which have been specifically configured for processing heavy crude largely from Latin America that would be impacted in the event of a disruption of foreign crude supplies. However, they would still be able to process a limited quantity of SPR crude and maintain their full production of gasoline.

To address the potential compatibility issues of the eleven heavy crude refiners and provide full protection for the Nation for all disruption scenarios, DOE has stated in the SPR Crude Compatibility Study, it will consider the storage of some volumes of lower gravity crude in the planned expansion of the SPR to 1.0 billion barrels.

SPR FILL POLICIES AND GOALS

The SPR achieved its congressionally mandated goal of 90 days of import protection in 1983. In 1985, the SPR's import protection level was 118 days. In the early 1990s, Congress discontinued funding for SPR oil acquisition and SPR fill activities were suspended in 1994. As a result of increasing U.S. petroleum consumption and increasing import dependence, the SPR's import protection level currently stands at roughly 58 days.

In 1999, the Clinton Administration took steps to reverse this erosion in the Nation's import protection by taking Federal royalty oil in-kind from offshore production leases and transferring it to the Department of Energy to fill the SPR. After the attack on September 11, 2001, the President directed the SPR to be filled to its then full capacity of 700 million barrels using Federal royalty oil in the interest of national security. This took four years and was achieved in August 2005.

In the Energy Policy Act of 2005 (EPACT 2005), Congress directed the Secretary of Energy to acquire petroleum in sufficient quantities to fill the SPR to the 1,000,000,000-barrel capacity "as expeditiously as practicable", without incurring excessive costs or appreciably affecting the price of petroleum products to consumers. It also directs the Secretary of Energy to promulgate procedures for the acquisition of petroleum for the Reserve. In addition, the law requires that the procedures include criteria for reviewing requests for the deferral of scheduled deliveries. The Administration has endorsed this SPR fill policy, finalized the necessary procedures, and resumed SPR fill activities in 2007.

In 2007, President Bush called on Congress in his State of the Union address, " . . . to further protect America against severe disruptions to our oil supply, I ask Congress to double the current capacity of the Strategic Petroleum Reserve." This increase to 1.5 billion barrels will provide vital petroleum stocks to protect America against potential disruptions to our oil supplies and disastrous impacts to our economy.

Under the SPR's EPACT 2005 oil acquisition procedures, DOE assesses current market conditions and the impact of acquiring additional oil for the Reserve—a market analysis which includes a review of current and future prices in official outlooks published by the EIA and IEA as well as other industry assessments and expert studies.

Royalty-in-kind (RIK) exchanges are conducted on a value basis and the quantity of oil received by the Government is independent of contracted crude oil prices. Separate market analyses conducted to address the restart of the SPR oil fill program using RIK exchange in the last half of 2007 and its continuation during the first half of 2008 concluded that the quantities involved would not exacerbate market conditions and the potential benefits derived from incrementally increasing the size of the SPR outweigh any potential risk to the market.

The SPR has approximately $584 million in available balance from the Hurricane Katrina Oil Sale in 2005 which is to be used for the repurchase of oil for the Reserve. Following a market assessment in January 2007, the SPR offered bids twice in the Spring of 2007 to acquire oil using these funds, but did not exercise the option to purchase due to unreasonable offers.

DOE plans to utilize the $584 million balance to purchase replenishment oil on the market in Fiscal Year 2008. Before buying additional reserves, DOE will conclude a market assessment and make a determination whether it is a reasonable time to issue a solicitation. The Department will continue to monitor market conditions and thoroughly review responses to solicitations to determine if bids reflect fair market value to the government.

SPR EXPANSION AND ENERGY SECURITY OBJECTIVES

Expansion of the SPR is essential to meeting the Nation's future energy security needs.. It is our intent to increase the level of import protection stored in the SPR as expeditiously as practicable.

The Administration's objectives for the SPR oil fill and energy security are:

- Achieve 727 million barrels in 2009
- Achieve 1.0 billion barrels in 2019
- Achieve 1.5 billion barrels in 2029

It is important to remember that SPR oil is a Government asset. A total of $19.2 billion in federal funding has been provided for acquisition of SPR (or $27.51/bbl). Based on current market prices, the SPR inventory is valued at $62.8 billion (assuming $90.00/bbl).

The amount currently being placed in the SPR of 70,000 barrels per day (as delivered by DOI to DOE, not as placed into the SPR) is less than one-tenth of one percent of the daily global demand of 85 billion barrels per day and is well within producers' existing excess production capacity. The modest fill rate does not put undue pressure on markets. The EIA, Cambridge Energy Research Associates (CERA) and the IEA have repeatedly stated that global oil demand growth and reduced commercial inventories have created tightness in the markets, not the modest SPR fill rate. No empirical evidence exists that would support the suggestion that markets are sensitive to supply changes that the SPR fill rate, 0.05% of world supply, is, or would drive market prices up at any significant level.

Mr. Chairman, and members of the Committee, this completes my prepared statement. I would be happy to answer any questions you may have at this time.

The CHAIRMAN. Thank you very much. We have this vote that started about 10 minutes ago. I think probably the best course is to just go into recess at this point and come back after these votes and commence again. Thank you.

Senator DOMENICI. How many do we have?

The CHAIRMAN. I believe there are three. Although the email said five, so I think the email was wrong. We'll find out. Thank you.

[Recessed.]

The CHAIRMAN. We are back from the votes. Our final vote is occurring now. Mr. Rusco, why don't you go ahead and give us the perspective of the General Accountability Office, please?

STATEMENT OF FRANK RUSCO, ACTING DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT, GOVERNMENT ACCOUNTABILITY OFFICE

Mr. RUSCO. Thank you. Mr. Chairman and members of the Committee, I'm pleased to be here today to discuss issues surrounding the cost and use of the Strategic Petroleum Reserve.

DOE has been directed to add about 300 million barrels of oil to the current reserve of almost 700 million barrels. With the price of oil recently hitting $100 per barrel, this expansion could easily run into the tens of billions of dollars. In my testimony today I will discuss three things DOE can do to reduce the cost of expanding the Reserve and to improve its effectiveness.

First, DOE has not, but should put heavier grades of crude oil in the Reserve because A: many U.S. refineries run most efficiently using heavier oil than what is currently in the Reserve, and B: heavier oils are cheaper than light oils.

Second, DOE should put fewer barrels of oil into the Reserve when oil prices are high and more when prices are low. Our work has shown that such an approach would save a great deal of money.

Third, DOE's current practice of trading royalty oil for different oil to put in the Reserve is more complicated and less efficient then buying oil directly in the market.

I would like to elaborate on these three points. Our work indicates that about 40 percent of all crude oil used by U.S. refineries is heavier than what is currently in the Reserve. Many U.S. refineries run most efficiently using heavier oils. In practice this means that during an oil supply disruption, many U.S. refineries would have to operate below capacity if they used oil from the Reserve.

This loss in capacity would reduce supplies of gasoline and diesel and exacerbate the economic effects of the supply disruption. DOE itself has determined that it should have 10 percent heavy oil in the Reserve, however to date, it currently has none. We believe more than 10 percent is likely warranted.

Including heavy oils in the Reserve would also save lots of money. In recent years the difference in price between light and heavy oil has averaged about $12 per barrel. If these price differences continue while DOE increases the size of the Reserve, DOE could potentially save over $3 billion by simply buying heavy oil.

DOE should put fewer barrels into the Reserve when prices are higher and more when prices are lower. One way to do this is to buy a constant dollar amount of oil each month as opposed to buying a constant number of barrels. This approach commonly referred to as dollar-cost averaging is very similar to what many of us do when we put steady monthly contributions into our 401k plans.

Our work indicates that DOE could have saved over a half a billion dollars during fiscal years 2001 through 2005 had it used such an approach. These foregone savings amount to almost 15 percent of the total cost of the oil added to the Reserve during these years. Going forward our simulations show that because oil prices are typically volatile using a constant dollar approach would save money as DOE adds to the Reserve whether oil prices are generally rising or falling.

Finally, trading royalty oil for other oil to fill the Reserve is inherently more complicated and less efficient than buying oil in the market. The Department of Interior gives royalty oil to DOE which turns around and trades it for different oil to put into the Reserve. This requires coordination between DOE and DOI. This coordination is not happening to an appropriate degree.

For example, the DOE Inspector General recently issued a report that among other things found that neither DOE nor DOI can be sure that DOE is even receiving the agreed upon number of barrels from DOI because neither agency follows the entire process from beginning to end. There's a blind spot in the oversight process.

To conclude, the United States has a Strategic Petroleum Reserve to protect our economy from oil supply shocks. It has proven useful in the past such as in the aftermath of Hurricanes Katrina and Rita. Currently the Reserve holds about 56 days of net oil im-

ports. But it will have to grow to maintain the same level of protection if demand for oil continues to rise.

However, we have a large Reserve now that can protect the economy from any, but the most extreme supply disruptions. This allows us some flexibility to be smarter about how we add oil to the Reserve. Our work shows that several billion dollars could be saved and the Reserve made more efficient by: one, putting heavier oils into the Reserve, two, buying less when prices are higher and more when prices are lower and three, using cash instead of a trading system for purchasing oil. Achieving these dollar savings is important in these times of slower economic growth and budget deficits.

Thank you. This completes my oral statement. I would be happy to answer any questions.

[The prepared statement of Mr. Rusco follows:]

PREPARED STATEMENT OF FRANK RUSCO, ACTING DIRECTOR, NATURAL RESOURCES AND ENVIRONMENT, GOVERNMENT ACCOUNTABILITY OFFICE

STRATEGIC PETROLEUM RESERVE

OPTIONS FOR IMPROVING THE COST-EFFECTIVENESS OF FILLING THE RESERVE

WHY GAO DID THIS STUDY

The Strategic Petroleum Reserve (SPR) was created in 1975 to help insulate the U.S. economy from oil supply disruptions and currently holds about 700 million barrels of crude oil. The Energy Policy Act of 2005 directed the Department of Energy (DOE) to increase the SPR storage capacity from 727 million barrels to 1 billion barrels, which it plans to accomplish by 2018. Since 1999, oil for the SPR has generally been obtained through the-royaltyin-kind program, whereby the government receives oil instead of cash for payment of royalties on leases of federal property. The Department of Interior's Minerals Management Service (MMS) collects the royalty oil and transfers it to DOE, which then trades it for oil suitable for the SPR.

As DOE begins to expand the SPR, past experiences can help inform future efforts to fill the reserve in the most cost-effective manner. In that context, GAO's testimony today will focus on: (1) factors GAO recommends DOE consider when filling the SPR, and (2) the cost-effectiveness of using oil received through the royalty-inkind program to fill the SPR.

To address these issues, GAO relied on its 2006 report on the SPR, as well as its ongoing review of the royalty-in-kind program, where GAO interviewed officials at both DOE and MMS, and reviewed DOE's SPR policies and procedures. DOE provided comments on a draft of this testimony, which were incorporated where appropriate.

WHAT GAO FOUND

To decrease the cost of filling the SPR and improve its efficiency, GAO recommended in previous work that DOE should include at least 10 percent heavy crude oils in the SPR. If DOE bought 100 million barrels of heavy crude oil during its expansion of the SPR it could save over $1 billion in nominal terms, assuming a price differential of $12 between the price of light crude oil and the lower price of heavy crude oil, the average differential over the last five years. Having heavy crude oil in the SPR would also make the SPR more compatible with many U.S. refineries, helping these refineries run more efficiently in the event that a supply disruption triggers use of the SPR. DOE indicated that, due to the planned SPR expansion, determinations of the amount of heavy oil to include in the SPR should wait until it prepares a new study of U.S. Gulf Coast refining requirements. In addition, we recommended that DOE consider acquiring a steady dollar value—rather than a steady volumeof oil over time when filling the SPR. This "dollar-cost-averaging" approach would allow DOE to acquire more oil when prices are low and less when prices are high. GAO found that if DOE had used this purchasing approach from October 2001 through August 2005, it would have saved approximately $590 million, or over 10 percent, in fill costs. GAO's simulations indicate that DOE could save money using this approach for future SPR fills, regardless of whether oil prices are trending up or down as long as there is price volatility. GAO also recommended that DOE consider giving companies participating in the royalty-in-kind program

additional flexibility to defer oil deliveries in exchange for providing additional barrels of oil. DOE has granted limited deferrals in the past, and expanding their use could further decrease SPR fill costs. While DOE indicated that its November 2006 rule on SPR acquisition procedures addressed our recommendations, this rule does not specifically address how to implement a dollar-cost-averaging strategy.

Purchasing oil to fill the SPR—as DOE did until 1994—is likely to be more cost-effective than exchanging oil from the royalty-in-kind program for other oil to fill the SPR. The latter method adds administrative complexity to the task of filling the SPR, increasing the potential for waste and inefficiency. A January 2008 DOE Inspector General report found that DOE is unable to ensure that it receives all of the royalty oil that MMS provides. In addition, we found that DOE's method for evaluating bids has been more robust for cash purchases than royalty-in-kind exchanges, increasing the likelihood that cash purchases are more cost-effective. For example, in April 2007, DOE solicited two different types of bids—one to purchase oil for the SPR in cash and one to exchange royalty oil for other oil to fill the SPR. DOE rejected offers to purchase oil when the spot price was about $69 per barrel, yet in the same month, DOE exchanged royalty-in-kind oil for other oil to put in the SPR at about the same price. Because the government would have otherwise sold this royalty-in-kind oil, DOE committed the government to pay, through foregone revenues to the U.S. Treasury, roughly the same price per barrel that DOE concluded was too high to purchase directly.

Mr. Chairman and Members of the Committee: We are pleased to be here today to participate in the Committee's hearing on the Strategic Petroleum Reserve (SPR). Congress authorized the SPR in 1975 to protect the nation from oil supply disruptions following the Arab oil embargo of 1973 and 1974 that led to sharp increases in oil prices. The federal government owns the SPR, and the Department of Energy (DOE) operates it. The SPR currently has the capacity to store up to 727 million barrels of crude oil in salt caverns in Texas and Louisiana. As of February 19, 2008, current inventory of the SPR stood at 698.6 million barrels of oil, which is roughly equivalent to 56 days of net oil imports. DOE made direct purchases of crude oil until 1994, when purchases were suspended due to the federal budget deficit, and in fiscal years 1996 and 1997 approximately 28 million barrels of oil were sold to reduce the deficit. Since DOE resumed filling the SPR in 1999, it has obtained oil from the Department of the Interior's Minerals Management Service (MMS) "royalty-in-kind" program. Through this program, the MMS receives oil instead of cash for payments of royalties from companies that lease federal property for oil and gas development. MMS contracts for some of this royalty oil to be delivered to designated oil terminal locations or "market centers" where DOE takes possession. Because the royalty oil often does not meet SPR quality specifications, and because the market centers can be distant from SPR storage sites, DOE generally awards contracts to exchange royalty oil at the market center for SPR-quality oil delivered to SPR facilities. Obtaining oil for the SPR through the royalty-in-kind program avoids the need for Congress to make outlays to finance oil purchases, but the foregone revenues associated with using royalty-in-kind oil to trade for SPR oil imply an equivalent loss of revenue because MMS would otherwise sell the oil and deposit the revenues with the U.S. Treasury. Interior estimates that the forgone revenue attributable to using the royalty-in-kind program to fill the SPR was $4.6 billion from fiscal year 2000 through fiscal year 2007.

The Energy Policy Act of 2005 directed DOE to increase the SPR storage capacity to 1 billion barrels and to fill it "as expeditiously as practicable without incurring excessive cost or appreciably affecting the price of petroleum products to consumers."[1] It required DOE to select sites to expand the SPR's storage capacity within 1 year of enactment, by August 2006. On February 14, 2007, Secretary of Energy Samuel Bodman designated three sites for the expansion, including a 160 million barrel facility in Richton, Mississippi, an 80 million barrel expansion of a facility in Big Hill, Texas, and a 33 million barrel expansion of a facility in Bayou Choctaw, Louisiana. In its June 2007 SPR plan, DOE anticipated these expansions would begin in fiscal year 2008 and be complete in 2018.[2] [3] DOE also indicated that it would prefer to continue using the royalty-inkind program to fill the additional storage capacity. DOE estimates the capital cost for the SPR expansion at approxi-

[1] Pub. L No. 109-58 (2005). The Energy Policy and Conservation Act, Pub. L. No. 94-163 (1975), created the SPR and authorized storage of up to 1 billion barrels of petroleum products.

[2] DOE, Office of Petroleum Reserves, Strategic Petroleum Reserve Plan: Expansion to One Billion Barrels (Washington, D.C.: June 2007).

[3] In his State of the Union speech on January 23, 2007, President Bush proposed expanding the SPR further to 1.5 billion barrels. Secretary of Energy Samuel Bodman indicated that DOE's goal was to have this expansion completed by 2027.

mately $3.67 billion, and estimates the cost of operating and maintaining the expanded portion of the SPR at $35 to $40 million per year.

As DOE begins to expand the SPR, past experiences may help inform future efforts to fill the SPR in the most cost-effective manner. In that context, our testimony today will focus on: (1) factors we recommend DOE consider when filling the SPR, and (2) the cost-effectiveness of using oil received through the royalty-in-kind program to fill the SPR.

To address these issues, we are summarizing work from our August 2006 report on the SPR and our ongoing review of the royalty-in-kind program.[4] For our August 2006 report, we contracted with the National Academy of Sciences to convene a group of 13 industry, academic, governmental, and nongovernmental experts to collect opinions on the impacts of past SPR fill and use and on recommendations for the future. We also reviewed records and reports from DOE and the International Energy Agency. In addition, for our ongoing review of the royalty-in-kind program for this committee and others, we identified and reviewed applicable laws and documentation on DOE policies and procedures for evaluating SPR purchase and exchange bids, and interviewed officials at both Interior and DOE. We have also drawn upon previous GAO reports on the royalty-in-kind program.[5] We conducted our work on this testimony in January and February 2008 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

In summary:

- To fill the SPR in a more cost-effective manner, we recommended in previous work that DOE include in the SPR at least 10 percent heavy crude oils, which are more compatible with many U.S. refiners and generally cheaper to acquire than the lighter oils that comprise the SPR's volume. DOE indicated that, due to the planned SPR expansion, such determinations should wait until it prepares a new study of U.S. Gulf Coast heavy sour crude refining requirements. In addition, we recommended that DOE consider acquiring a steady dollar value of oil over time and allowing oil companies more flexibility to defer delivery of royalty-in-kind exchanges to the SPR when prices are likely to decline in return for additional deliveries in the future. In updating us on the status of this recommendation, DOE indicated that its November 8, 2006, rule on SPR acquisition procedures addressed our recommendations; however, this rule does not specifically address both how to implement a dollar-cost-averaging strategy and how to provide industry with more deferral flexibility. In subsequent comment, DOE noted that the November 8, 2006, acquisition procedures do not address dollar-cost-averaging, but they do address flexibility of purchasing and scheduling in volatile markets.
- Filling the SPR with oil purchased in cash is likely to be more cost-effective than filling the SPR through the royalty-in-kind program for several reasons. For example, the royalty-in-kind program adds a layer of administrative complexity to the task of filling the SPR, increasing the potential for waste or inefficiency. Moreover, DOE has evaluated the cost of cash purchases more thoroughly than exchanges, increasing the likelihood that cash purchases are more cost-effective. For example, in May 2007, DOE rejected cash purchases for the SPR, concluding that the current price of about $69 per barrel was unusually high. However, in the same month, DOE entered into contracts to exchange royalty oil, effectively committing the government to pay—through foregone revenues to the U.S. Treasury—about the same price for oil that it concluded was too high to purchase directly. In November, DOE entered into another exchange contract when oil was about $96 per barrel.

---

[4] GAO, Strategic Petroleum Reserve: Available Oil Can Provide Significant Benefits, but Many Factors Should Influence Future Decisions about Fill, Use, and Expansion, GAO-06-872 (Washington, D.C.: Aug. 24, 2006).

[5] GAO, Royalties Collection: Ongoing Problems with Interior's Efforts to Ensure a Fair Return for Taxpayers Require Attention, GAO-07-682T (Washington, D.C.: Mar. 28, 2007).

GAO, Mineral Revenues: Cost and Revenue Information Needed to Compare Different Approaches for Collecting Federal Oil and Gas Royalties, GAO-04-448 (Washington, D.C.: Apr. 16, 2004).

GAO, Mineral Revenues: A More Systematic Evaluation of the Royalty-in-Kind Pilots is Needed, GAO-03-296 (Washington, D.C.: Jan. 9, 2003).

DOE COULD IMPROVE THE COST-EFFECTIVENESS OF FILLING THE SPR

To decrease the cost of filling the SPR and improve its efficiency, we have recommended in our previous work that DOE: (1) include at least 10 percent heavy crude oil in the SPR, (2) consider acquiring a steady dollar value of oil, and (3) consider allowing oil companies additional flexibility to defer deliveries in exchange for delivering additional barrels of oil at a later date. The current composition of the SPR is entirely of medium to light grades of oil.[6] [7] Including heavier oil in the SPR could significantly reduce fill costs because heavier oil is generally less expensive than lighter grades. We recommended in our August 2006 report that DOE, at a minimum, implement its own recommendation made in a 2005 study to have at least 10 percent heavy oil in the SPR.[8] In addition, we found that DOE may have underestimated how much heavy oil should be in the SPR to minimize oil acquisition costs. Therefore, we further recommended that DOE examine the maximum amount of heavy oil that should be held in the SPR. To illustrate the potential magnitude of savings from including heavy crude oil in the SPR, we have done some simple calculations. If DOE included 10 percent heavy oil in the SPR as it expands to 1 billion barrels, that would require DOE to add 100 million barrels of heavy oil, or about one-third of the total new fill. From 2003 through 2007, Maya—a common heavy crude oil—has traded for about $12 less per barrel on average than West Texas Intermediate—a common light crude oil. If this price difference were to persist over the duration of the new fill period, DOE would save about $1.2 billion in nominal terms by filling the SPR with 100 million barrels of heavy oil.[9] The savings could be even larger if DOE included more than 10 percent heavy oils in the SPR.

Including heavier oil would have the additional benefit of making the composition of SPR oil more compatible with U.S. refineries. In recent years, many refiners in the United States have upgraded their facilities so they can process heavy oil. Our analysis of DOE's Energy Information Administration (EIA) data shows that, of the approximately 5.6 billion barrels of oil that U.S. refiners accepted in 2006, approximately 40 percent was heavier than that stored in the SPR.[10] Refineries that process heavy oil cannot operate at normal capacity if they run lighter oils. For instance, DOE's December 2005 study found that the types of oil currently stored in the SPR would not be fully compatible with 36 of the 74 refineries considered vulnerable to supply disruptions. DOE estimated that if these 36 refineries had to use SPR oil, U.S. refining throughput would decrease by 735,000 barrels per day, or 5 percent, substantially reducing the effectiveness of the SPR during an oil disruption, especially if the disruption involved heavy oil. To improve the compatibility of SPR oil with refineries in the United States, the DOE study concluded that the SPR should contain about 10 percent heavy oil. However, our August 2006 report found that DOE may have underestimated how much heavy oil should be in the SPR to maximize compatibility with refiners. We also found DOE may have underestimated the potential impact of heavy oil disruptions on gasoline production. Several refiners who process heavy oil told us that they would be unable to maintain normal levels of gasoline production if forced to rely on SPR oil as currently constituted. For example, an official from one refinery stated that if it exclusively used SPR oil in its heavy crude unit, it would produce 11 percent less gasoline and 35 percent less diesel. Representatives from other refineries told us they might need to shut down portions of their facilities if they could not obtain heavy oil. For these reasons, we recommended that DOE conduct a new review of the optimal oil mix in the SPR and determine the maximum volume of heavy oil that could be effectively put in the reserve.

In addition, we recommended that DOE consider filling the SPR by acquiring a steady dollar value of oil over time, rather than a steady volume of oil over time as has occurred in recent years. This "dollar-cost averaging" approach would allow

---

[6] For information on the composition of the SPR, see DOE, Office of the Assistant Secretary for Fossil Energy, Strategic Petroleum Reserve: Annual Report for Calendar Year 2006.

[7] The weight of oil is measured by its gravity index. According to DOE's Energy Information Administration (EIA), light oil is greater than 38 degrees gravity, while intermediate oils, such as those in the SPR, are 22 to 38 degrees gravity.

[8] See DOE, Office of the Deputy Assistant Secretary for Petroleum Reserves, Strategic Petroleum Reserve Crude Compatibility Study (December 2005).

[9] This calculation is intended to illustrate the magnitude of potential savings, and is not meant to be a projection of actual savings. The actual price difference between light and heavy oil over the course of the new fill could be smaller or larger than over the past 5 years, which would either reduce or increase the savings, respectively.

[10] According to DOE's EIA, heavy oil has a gravity index of 22 degrees or below. According to EIA 2006 data, about 10 percent of the oil accepted by U.S. refiners has this gravity index. An additional 30 percent of oil accepted by U.S. refiners was 22 to 30 degrees gravity, however, according to DOE, all oils stored in the SPR range from approximately 30 to 37 degrees gravity.

DOE to take advantage of fluctuations in oil prices and ensure that more oil would be acquired when prices are low and less when prices are high. In our 2006 report, we found that if DOE had used this approach from October 2001 through August 2005, it could have saved approximately $590 million in fill costs. We also ran simulations to estimate potential future cost savings from using a dollarcost-averaging approach over 5 years and found that DOE could save money regardless of the price of oil as long as there is price volatility, and that the savings would be generally greater if oil prices were more volatile.

We also recommended that DOE consider allowing oil companies participating in the royalty-in-kind program more flexibility to defer their deliveries to the SPR at times when filling would significantly tighten the market or when prices are expected to decline.[11] In return for these deferrals, companies would provide additional barrels of oil when they resumed deliveries. DOE has already approved some delivery deferrals at companies' requests, such as during the winter 2002-2003 oil workers' strike in Venezuela. From October 2001 through August 2005, DOE received an additional 4.6 million barrels of oil for the SPR valued at approximately $110 million as payment for these delivery deferrals. However, DOE has denied some deferral requests and experts have noted that there is room to expand the use of deferrals. Experts noted DOE would need to exercise its authority to deny deferrals at times when it is in the national interest. Nonetheless, given that the SPR currently holds roughly 56 days of net imports, we believe there is sufficient inventory for some flexibility in allowing deferrals.

In updating us on the status of recommendations we made to DOE in our August 2006 report, DOE indicated that its November 8, 2006, rule on SPR acquisition procedures addressed our recommendations on dollar-cost-averaging and deferrals. However, the new acquisition rule does not specifically address our recommendations to study both how to implement a dollar-cost-averaging strategy and how to provide industry with more deferral flexibility. In subsequent comment, DOE noted that the November 8, 2006, acquisition procedures do not address dollar-cost-averaging, but they do address flexibility of purchasing and scheduling in volatile markets. As to our recommendation on the optimal mix of oil in the SPR, DOE indicated that, due to the planned SPR expansion, such determinations should wait until it prepares a new study of U.S. Gulf Coast heavy sour crude refining requirements. We believe the SPR expansion offers DOE an ideal opportunity to change the SPR's oil mix to include heavier oils that are less costly to acquire and better match U.S. refining capacity. We look forward to DOE completing its new study of U.S. Gulf Coast heavy crude refining requirements and believe such a study will find that DOE should include at least 10 percent heavy oils in the SPR.

PURCHASING OIL TO FILL THE SPR MAY BE MORE COST-EFFECTIVE THAN CURRENT ROYALTY-IN-KIND PROGRAM

There are several reasons that purchasing oil—as DOE did until 1994—may be more cost-effective than filling the SPR using the current royaltyin-kind program. For instance, there may be fewer bidders for the royalty oil under the current exchange system than a direct cash purchase system, which in turn may limit competition and the exchange deals that DOE can negotiate. In the exchange process, a single company must be able to and interested in both accepting oil at the designated market centers and delivering other oil with specific characteristics to the SPR. This may limit the number of companies interested in bidding on exchange contracts. In contrast, if DOE purchased oil, many additional companies may be interested in selling their oil, increasing competition and lowering prices.[12] In 2007, the then Deputy Assistant Secretary for Petroleum Reserves, who directed activities of the SPR, told us that he agrees with this reasoning. The inherent limits of exchanging versus direct purchases are compounded by the fact that DOE and Interior have not systematically analyzed where to send royalty oil in a way that maximizes the value of the exchanges. The value of exchanges is a function of both the costs to deliver oil to market centers and the deals that DOE can negotiate at particular market centers. The informal process that DOE and Interior currently use to identify market centers does not systematically analyze the tradeoffs between these two factors to identify market centers that optimize net value to the government.

In addition, royalty-in-kind exchanges add a layer of administrative complexity to the task of filling the SPR, increasing the potential for waste or inefficiency. In a

[11] For example, this situation could occur if futures prices are lower than current prices. Futures prices of oil reflect the cost of delivery at a specified place, price, and time in the future.

[12] We note that including heavier oils in addition to lighter oils would also increase the number of potential suppliers of oil for the SPR.

January 2008 report, the DOE Inspector General concluded that DOE does not have an effective control system over receipts of royalty oil from Interior at the market centers.[13] Specifically, the Inspector General found that DOE did not have adequate controls to ensure that the volumes of oil that contractors reported to have received from Interior at the market centers matched scheduled deliveries. As a result, DOE did not have assurance that it received all of the oil that Interior shipped, raising concerns that DOE may not have received its full entitled deliveries to the SPR. If DOE purchased all of its oil, it would no longer need to exchange oil at designated market centers and would not need to coordinate with Interior. Moreover, rather than diverting a fraction of the oil collected through the royalty-in-kind program to fill the SPR, Interior could sell that fraction in competitive sales, as it currently does for the other oil it receives through the royalty-in-kind program. A senior Interior official said that selling the royalty oil would be simpler for Interior to administer than the current exchanges.

Further, DOE's method for evaluating bids is more robust for cash purchases than royalty-in-kind exchanges, increasing the likelihood that cash purchases are more cost-effective. In November 2006, DOE issued a final rule that describes how DOE will evaluate offers when it is purchasing oil and when it is exchanging royalty oil for other oil for the SPR.[14] This rule provides DOE with considerable flexibility in the degree of analysis it can conduct when evaluating offers, and, in practice, DOE's method for evaluating bids for cash purchases has been more robust than it has for exchanges. For example, in April 2007, DOE solicited two different types of bids—one to purchase oil for the SPR in cash and one to exchange royalty oil for other oil to fill the SPR.[15] In deciding whether to purchase oil, DOE evaluated the bids it received in the context of overall market trends. It concluded that the offers it received from sellers were priced too high, in part because the price of oil was generally high and because the prices of the specific type of oil DOE sought to purchase were unusually high relative to other oil types. As a result, DOE rejected offers to purchase oil when the spot price for Light Louisiana Sweet (LLS)—a commonly used benchmark for Gulf Coast oil—was about $69 per barrel and decided to delay purchasing any oil until at least the end of the summer driving season.[16] In contrast, DOE's method for evaluating bids for exchanging royalty oil focused on whether the oil DOE would receive would be at least the same value as the oil it would exchange. It did not include an analysis of whether overall market conditions indicated that it would be more profitable for the federal government to stop or delay exchanges and have Interior sell the royalty oil for cash instead. In this case, in the same month, DOE entered into royalty oil exchange contracts when the spot price of LLS was about $67 a barrel, effectively committing the government to pay—through foregone revenues to the U.S. Treasury—roughly the same price for oil that DOE concluded was too high to purchase. Moreover, in November, it awarded additional exchange contracts when the spot price of LLS had reached $96 a barrel.[17]

It should also be noted that the current exchange method is less transparent than direct purchases because the primarily cash-based federal budget does not account for noncash transactions. Interior estimates that the royalty-in-kind program cost the federal government in total foregone revenue $4.6 billion from fiscal year 2000 through fiscal year 2007. This foregone revenue was not reflected in the federal budget since no federal cash flows were involved. Congressional budget decisionmakers therefore have not had the opportunity to consider whether the value of the transferred oil could be reallocated to other competing resource needs.

Importantly, the royalty-in-kind effort to fill the SPR creates, essentially, a "blind spot" where neither DOE nor Interior, the two agencies responsible for running the joint program, systematically examines whether exchanges of millions of barrels of royalty oil have been a cost-effective approach to filling the reserve. DOE does con-

---

[13] DOE Office of Inspector General, Audit Report: Department of Energy's Receipt of Royalty Oil, DOE/IG-0786 (Washington, D.C.: Jan. 2008).

[14] 1410 C.F.R. Part 626.

[15] DOE's solicitations to purchase oil were part of a plan to replace 11 million barrels of SPR oil that DOE sold in the fall of 2005 after Hurricane Katrina disrupted refinery supplies.

[16] The spot price reflects the price for immediate settlement of oil purchases.

[17] By itself, the spot price does not determine how many barrels of oil the government will receive through royalty exchanges. Rather, this is determined by the relative value—the price of the grade of oil that DOE has to exchange (the oil it receives from Interior) versus the price of the grade of oil that it wishes to receive in an exchange. This means that the government could receive the same number of barrels of SPR oil through its exchanges when spot prices are low or high. However, from a broader federal perspective, it would be more cost-effective if the federal government deferred royalty exchanges when oil prices were high and sold the royalty oil for cash. It could then purchase oil when oil prices were lower, acquiring more of the desired grade of oil for the same amount of money.

duct a prospective analysis to estimate whether the value of the oil it will receive in the exchanges will be at least as valuable as the royalty oil it will exchange. However, DOE enters into exchange agreements that can last 6 months, and DOE's initial estimates of the values of the different oil types may not hold over the duration of the contracts. DOE has not analyzed any of the completed exchanges to determine whether those exchanges performed as well as expected. Similarly, when evaluating the performance of the royalty-in-kind program overall, Interior does not analyze whether the royalty oil transfers to DOE are a cost-effective means to fill the reserve.[18] The 60.7 million barrels of oil that Interior transferred to DOE from fiscal year 2004 to 2005 accounted for 58 percent of all the royalty-in-kind oil that Interior collected during that time. While Interior reports to Congress each year on the financial performance of its royalty-in-kind program, these reports have not included a measure of the cost-effectiveness of using royalty oil to fill the SPR.

Because the SPR has reached sufficient size to address near-term supply disruptions, decisions about future fill practices can be made in a more flexible, cost-effective manner without unduly hurting our ability to respond to such disruptions. With oil prices recently exceeding $100 a barrel, there should be greater interest in finding ways to reduce fill costs. If it is to reach its goal of filling the expanded SPR by 2018, DOE will have to, in some combination, purchase or receive through royalty-in-kind transfers roughly 300 million barrels of oil. Our work shows that substantial cost savings could be achieved through increased purchasing of heavy oil, a dollar-cost-averaging purchasing strategy, more flexibility in the timing of oil purchases and deliveries, and greater attention paid to the opportunity costs of filling the SPR with royalty oil. Based on our past estimates of the cost savings potential of dollar cost averaging and the significantly lower cost of heavier oils, DOE could save well over 10 percent of the costs of filling the SPR to the currently authorized level—an amount that is likely well in excess of $1 billion. During this era of dire national long-term fiscal challenges, it is all the more important that DOE make fill decisions in a cost-effective manner.

Mr. Chairman, this concludes my prepared statement. I would be pleased to respond to any questions that you or other members of the Committee may have at this time.

The CHAIRMAN. Thank you very much. Mr. Verrastro, why don't you go right ahead?

STATEMENT OF FRANK A. VERRASTRO, DIRECTOR AND SENIOR FELLOW, ENERGY AND NATIONAL SECURITY PROGRAM, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES

Mr. VERRASTRO. Thank you, Mr. Chairman. I, too, appreciate the opportunity to appear before you today to talk about the SPR and also inventory policies writ large. As you have copies of my complete written statement, let me focus on just a few remarks this morning on key points.

The Strategic Petroleum Reserve in the U.S. is the world's largest stockpile of government owned crude held specifically for the purpose of mitigating the impacts of oil supply disruptions. Directives on the use of the Reserve, as well as definitional guidelines on what constitutes a severe supply disruption in a national energy emergency are incorporated in the Energy Policy and Conservation Act that was passed in 1975, although the concept of a national oil storage system predates EPCA by about 30 years. The statutory definitions also provide that a supply interruption is deemed to exist if the President determines that a severe increase in the price of petroleum products has resulted from such emergency and such price increase is likely to cause major adverse impact on the national economy. So it's more than just volumes.

[18] Interior does, however, have procedures in place to ensure that it pays a reasonable rate to transport oil from the offshore federal leases, where the oil is produced, to the market centers where DOE takes possession of the oil.

My written statement goes into greater detail on the history of the Reserve. So I won't repeat that history here except to emphasize that the language of EPCA clearly contemplated a Petroleum Reserve to address crude oil and refined product shortages but that studies at the time concluded that a more centralized crude oil reserve was a decidedly better option and also less expensive than a host of smaller product stockpiles. But much has changed in the 30 years since that analysis was originally done.

One of my recommendations today is that as we pursue a national strategy of greater diversification of fuels and suppliers in the face of new risks and market conditions. We should not neglect considering the role of strategic stockpiles and how their composition and use can better ensure reliable supply. With respect to operating discretion and management of the Reserve, it should be noted that EPCA affords the President significant and broad discretion. That not surprisingly, and as you pointed out in the beginning, Mr. Chairman, the current Administration has chosen to broadly exercise that latitude, particularly with respect to conditions under which they would use the Reserve.

In 2004, Vice President Cheney noted that the Administration would expect to use the SPR for dealing with shortfalls arising only from major supply disruptions which he characterized as involving the loss of some five or six million barrels a day. In his characterization the Vice President invoked both the significant volumetric supply loss as well as the criteria to adverse economic impact in price rises. In the aftermath of Katrina, President Bush issued a finding of severe supply emergency and directed the Secretary of Energy to drawdown and sell crude from the SPR in an attempt to compensate for the loss of production from the U.S. Gulf of Mexico.

The real significance of that finding however was that it triggered a broader release response from the IEA including the movement of refined products. Which points to one of the weaknesses of the SPR design. The devastating impacts of Katrina was not limited to off shore production facilities alone as it severely affected refining operations in the Gulf as well as power supply to pipelines and distribution facilities along the East Coast and elsewhere.

The refinery outages negated in part the actual benefit of making SPR crude available. The bulk of the real assistance came from the drawdown of refined products stocks both here and abroad and the waiving of fuel specs in various states. The combined crude and products shortage posed a decidedly unique challenge. But one which can plausibly reoccur if the Gulf is again assaulted by Category four storms, inland flooding and power and refining outages.

With respect to managing the Reserve in the current market one of rapidly increasing prices, the Administration's performance over the past year is, I believe, highly questionable. For a while they have repeatedly stated that they believe this year long price rise is a result of market fundamentals as they continue to call on OPEC to increase crude production. They also continue to withdraw oil from the market.

This decision, I believe, has both significantly undermined our entreaties for additional OPEC supply and concurrently in bold and continued market speculation, both of which are driving current

prices. Consequently, contributing to a weakened U.S. economy. Consequently I empathize with Members of the Congress who have called for suspending the SPR fill at this moment in time.

My written statement also contains examples of how creative ideas and thoughtful decisionmaking with respect to management of the Reserve can both preserve the core objective of the program while taking into consideration actual, real time events in the market. These include suspension of previous bills in order to make more oil available to the market during times of supply and uncertainty, Secretary Richardson's use of royalty oil to replace SPR volumes, rebuilding volumes in a time of low prices, namely 1999, Secretary Bodman's 2006 decision to delay the repayment of loaned oil volumes from the previous fall to ensure that refiners had adequate crude supplies to meet processing and product sales requirements. The periodic swaps of oil to ensure that the crude in storage continues to match refinery needs and process capability.

My statement also contains several examples of how various pieces of recent legislation have contradictory impacts. Serve to undermine the broader energy goals. While I won't go into them now, I would be happy to elaborate on any of those examples.

My final point today relates to your question about the desirability of doubling the size of the SPR. On that point I would note, as others have, that as we contemplate reducing reliance on oil as a way to mitigate the environmental impact of hydrocarbon use. Doubling the size of the Reserve makes little to no sense. It redirects billions of dollars away from research, conservation efficiency programs to accomplish expansion that is both short sighted and I believe, ill conceived.

I do however agree with Senator Craig that a $50 purchase price is certainly low in today's market. I also support the idea that we have domestic resources available and those should be explored. Thank you.

[The prepared statement of Mr. Verrastro follows:]

PREPARED STATEMENT OF FRANK A. VERRASTRO, DIRECTOR AND SENIOR FELLOW, ENERGY AND NATIONAL SECURITY PROGRAM, CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES

Mr. Chairman, Senator Domenici, Members of the Committee I appreciate the opportunity to appear before you today to discuss the creation and use of the Strategic Petroleum Reserve (SPR) and inventory policies writ large, and also to comment on the need for a more comprehensive look at energy policy generally, focusing on directives which while designed to accomplish specific objectives, often produce unintended consequences that may ultimately undermine national policy goals.

I currently serve as Senior Fellow and Director of the Energy and National Security Program at the Center for Strategic and International Studies (CSIS), but the comments and views I express here today reflect a professional background that spans over three decades in both government and the private sector dealing with energy policy issues. In addition to having held positions within the White House (Energy Policy and Planning staff) and at the Departments of Interior and Energy (including Director, Office of Energy Producing Nations and Deputy Assistant Secretary for International Resources), I have 25 years of experience in the energy sector—first as Director of Refinery Policy and Crude Oil Planning for TOSCO Corporation (formerly the nation's largest independent refiner) and more recently as a Senior Vice President for Pennzoil Company.

My remarks this morning are primarily aimed at discussing the objectives and use of the SPR, the timing and consequences of continuing to fill the reserve in a time of tight markets and rising oil prices, and more general observations and comments directed at the notion of policy directives and the role of inventory in a changing market.

THE ESTABLISHMENT AND USE OF THE STRATEGIC PETROLEUM RESERVE

The US Strategic Petroleum Reserve (SPR) is the world's largest stockpile of government-owned crude oil held specifically for the purpose of mitigating the impacts of oil supply disruptions. The SPR was established under provisions of the Energy Policy and Conservation Act (EPCA) adopted in 1975, largely in reaction to the Arab Oil Embargo of 1973, although the concept of a national oil storage system predates EPCA by at least 30 years.

In 1944, Interior Secretary Harold Ickes advocated the stockpiling of emergency supplies of crude oil. Eight years later, the Minerals Policy Commission in the Truman administration recommended the creation of a strategic oil supply. Following the 1956 Suez Crisis, President Eisenhower resurrected the notion of a strategic oil stockpile and a Cabinet Task Force report on Oil Imports Control in 1970 recommended the establishment of similar reserve.

Directives on the use of the reserve as well as definitional guidelines as to what constitutes a "severe supply disruption" and a "national energy supply shortage" are incorporated in the EPCA legislation. Similarly, the circumstances under which the SPR might be used are also outlined in EPCA, and these include responding to a national supply shortage which the President determines ". . . is or is likely to be of significant scope and duration, and of an emergency nature, may cause major adverse impact on national safety and the national economy . . ." and is likely to result from an interruption in the supply of petroleum products (domestic or imported), sabotage or an act of God.

The statutory definitions also provide that a severe supply interruption is deemed to exist if the President determines that a severe increase in the price of petroleum products has resulted from such emergency situation and such price increase is likely to cause a major adverse impact on the national economy (emphasis added).

In addition to specifying the conditions under which a "full drawdown" of the reserve may be contemplated, EPCA also provides for a "partial drawdown" (with volume limitations) when such action ". . . would assist directly and significantly in preventing or reducing the adverse impact of such shortage."

SIZE AND MAKEUP OF THE RESERVE

Prior to the passage of EPCA, a variety of studies were undertaken to determine the optimum size and composition of the strategic reserve. Assuming continued demand growth in the future, the SPR was congressionally authorized to be built up to one billion barrels in volume, with an initial target size of 500 million barrels. For purposes of comparison, gross oil imports in 1974 and 1975 were slightly in excess of 6 million barrels per day, representing some 36% of total US petroleum demand.[1]

The language of EPCA contemplated a petroleum reserve to address crude oil and refined product shortages, and it also called for the development of an SPR plan. A 1976-77 study, which formed the basis for the SPR plan concluded that the domestic refining industry was indeed robust and capable of processing available crude(s) into a variety of needed refined products. The study further concluded that a centralized, crude oil based storage facility was much less expensive to construct and manage than multiple storage sites handling a variety of products and the recommendation for a crude oil reserve was subsequently adopted.

The reserve as currently constructed houses a variety of co-mingled crudes (30-40 degrees API gravity) in salt caverns located in four storage sites (Bayou Choctaw, West Hackberry, Big Hill and Bryan Mound) along the Texas and Louisiana portions of the Gulf coast. The sulfur content of the various crude accumulations ranges from 0.5 percent (sweet crude) to 2.0 percent (sour). As of February 22, over 698 million barrels of crude oil were held in SPR storage facilities. Approximately 40% of the crude volume is sweet.[2]

The size of the reserve is frequently described as providing 51-56 days of import protection (total volume in storage divided by average daily imports), but this is an extremely misleading and somewhat useless factoid. At current fill levels (roughly 700 million barrels), the maximum drawdown rate (for the first 90 days) is about 4.4 million barrels per day (b/d)—which at current consumption rates would meet about 5 hours of average daily needs. Drawing down the SPR at its maximum rate would replace roughly a third of US daily oil imports.

---

[1] U.S. Energy Information Administration; historical data from the Annual Energy Review on petroleum (crude oil and refined products) imports and consumption.

[2] U.S. Department of Energy Website, Office of Fossil Energy, Facts and Questions related to the Strategic Petroleum Reserve.

In addition to the crude oil facilities, in 2000 President Clinton directed the establishment of a 2 million barrel home heating oil reserve in the northeastern United States. The reserve currently houses just under 2 million barrels of heating oil in three locations in Connecticut (two sites) and New Jersey.

OPERATING DISCRETION AND MANAGEMENT OF THE SPR

As is the case with other legislation, the EPCA provisions allow the president significant and broad discretion in managing the SPR. And not unlike their predecessors, the current administration has chosen to exercise that discretion, particularly with respect to the conditions under which they would contemplate the use of the reserve.

Their criteria, however, seems to be somewhat of a moving target.

In August of 2004, Vice President Cheney (in a campaign appearance) articulated the conditions under the Bush Administration would contemplate using the SPR. That characterization involved the loss of some "5 or 6 millions barrels a day (of supply) out of the 20 million barrels (per day) that we currently consume." In the Vice President's words, such a supply loss "would constitute the kind of national crisis that would drive prices so high and probably bring large parts of our economy to halt." Such a situation, he said, would require using the reserve.[3]

In his characterization the Vice President invoked both the significant (volumetric) supply loss as well as the criteria of adverse economic impact and high prices. In the absence of any other formal pronouncement by the administration on the use of the reserve, the Vice President's comments were broadly interpreted as working guidelines.

Roughly one year later (September 2, 2005), in the aftermath of hurricane Katrina, President Bush issued a Finding of a Severe Energy Supply Interruption and directed the Secretary of Energy to drawdown and sell crude oil from the SPR in an attempt to compensate for the loss of offshore production from the US Gulf of Mexico. Energy Secretary Bodman immediately authorized the sale of 30 million barrels of crude to US markets. The administration's action resulted in the actual sale of 11 million barrels of crude and the "time loaning" of an additional 9.8 million barrels.

The disruption caused by Katrina, while substantial and devastating to the families and economy of the region and throughout the country, never approached in volumetric terms the loss criteria earlier articulated by the Vice President. While recognizing that the release of several millions of barrels of short haul oil was clearly an important response to the devastation, the real significance of the Presidential finding was that it triggered a broader release response from the International Energy Agency (IEA), including the movement of refined products.

Which points to the one of the weaknesses of the SPR design.

The devastating impact of Hurricane Katrina was not limited to offshore production facilities alone as it severely affected refining operations in the Gulf Coast as well as power supply to pipelines and distribution facilities along the east coast and elsewhere. The refinery outages negated, in part, the actual benefit of making the SPR crude available and the bulk of the real assistance came from drawdown of refined product stocks both here and abroad and the waiving of fuel specs in various states. This combined (crude and product shortage) emergency posed a decidedly different challenge than many of the various crude oil disruption events originally contemplated by emergency planners—but clearly represents one which can plausibly reoccur if the Gulf Coast is again assaulted by category 4 storms, inland flooding and power and refining outages.

CURRENT MARKET CONDITIONS

In 2006, partially as a consequence of increased global supply and reduced demand due to higher oil prices, oil inventories around the world began to increase. In September, global inventories were running some 120 million barrels above the 5 year average. In a marked departure from the previous two years, a mild 2006 hurricane season resulted in no substantial losses to US offshore production. Prospects of a mild winter season, increases in non-OPEC supply, declining demand due to prices and the inventory build caused oil prices to plummet from $75 per barrel to the high $50 per barrel range (see Figures 1 and 2 below).*

Responding to the precipitous plunge in oil prices and looking ahead to the second quarter (2Q 2007) when demand typically declines, OPEC members began

[3] "US Might Tap SPR if Half Imports Stop—Cheney", Reuter's Report, Washington, D.C., August 25, 2004.

* All figures have been retained in committee files.

ratcheting down production—forcing consumers to meet energy demand by drawing down inventory worldwide. Between September 2006 and January of 2008, global inventories declined by over 130 million barrels. With limited spare production capacity (mostly in Saudi Arabia), continued demand growth (albeit not as robust as previous years), heightened geopolitical tensions (e.g., Russia, Venezuela, Nigeria, Iran, Pakistan, Iraq, etc.) and the entry of a new class of investors into commodities trade, the NYMEX price for crude oil increased from just over $50 per barrel in January to the $100 per barrel marker by year's end (see Figure 3 below).*

Over this period, the strength of the US economy began to decline. And while oil prices were not the singular cause, higher energy prices generally clearly impacted the outcome.

During this period, when asked about price increases, administration spokespersons continued to attribute the movement to market fundamentals, while simultaneously calling on OPEC to increase output. More recently, in response to threats by Venezuelan president Hugo Chavez to suspend crude shipments to the US, the administration has indicated that the SPR would be used to offset any loss of supplies, even though the reduction would fall well below the Cheney standard. No mention, however, was made of suspending the current fill in the event of such a drawdown.

And herein, I believe, lies the dilemma. If the administration truly believes market fundamentals are driving today's prices and they implore OPEC members to put more oil on the market (see statements by both President Bush and Secretary Bodman during their recent Middle East trips), then one should logically be able to conclude they believe the market is undersupplied—i.e., characterized by more buyers than sellers.

Against that backdrop, and given the conditions laid out in EPCA, it might be logical to conclude that one might want to consider putting oil into the market during such a time of tight or short supply rather than taking oil out of the market—as the administration continues to do.

I empathize with Members of Congress who have called for suspending the SPR fill at this moment in time. As indicated earlier, according to DOE statistics, as of last Friday, the SPR currently contains just over 698 million barrels of oil, with plans to acquire an additional 29 million barrels (to reach the present physical capacity of 727 million barrels).

One might well ask why the administration feels compelled to continue to take oil off the market by adding to the reserve at a time when oil prices are at/near record highs. A plausible (but incomplete) explanation might reference the fact that the Energy Policy Act of 2005 (EPAct) directed the Secretary of Energy to expand the SPR to 1 billion barrels and to fill the reserve as quickly as possible, but such a reference would ignore certain critical conditions.

In fact, section 301 (e)(1) of EPAct2005 states that . . ." the Secretary shall, as expeditiously as practicable, without incurring excessive cost or appreciably affecting the price of gasoline or heating oil to consumers, acquire petroleum in quantities sufficient to fill the SPR to the 1 billion barrel capacity authorized under section 154(a) of EPCA . . ."

The current fill rate (using the royalty in kind program) for crude oil additions to the SPR is running at about 70,000 barrels per day (b/d). Statements made by the administration have consistently made the argument that withdrawing 70,000 b/d of oil from an 86 million b/d day market, in percentage terms, has a negligible impact on prices. I do not dispute that statement in terms of simple arithmetic.

I would note, however, that the impact of the administration's seemingly unwavering determination to not release or imply release of SPR oil absent a major catastrophic shortfall—i.e., along the lines of the Mr. Cheney's suggested criteria of 5 to 6 million b/d—has in today's tight market encouraged and emboldened traders and speculators to talk up prices without fear of reprisal. These investors remain confident that the current administration is unlikely to make SPR oil available to the market under current conditions and that confidence is only bolstered by the fact that the administration continues to withdraw oil from an already tight market.

The administration's insistence on continuing the SPR fill, in my judgment, severely undermined the urgency and impact of recent appeals by both the President and Secretary Bodman to OPEC producers to increase their own output. I would further note that the intention to add roughly 125,000 b/d of light, sweet oil to the reserve this spring (in pursuit of reaching the 727 million barrel storage target)

could adversely impact the ability of domestic refiners to maximize gasoline during the upcoming driving season.[4]

Which brings me to my final points—addressing the broader issues of enlightened inventory management and the need for consistent and thoughtful policies to enhance our energy security.

ENLIGHTENED INVENTORY MANAGEMENT

Addressing the broader issue of enlightened inventory management, I would first note that as our fuels system and threats to the reliable and uninterrupted delivery of those fuels change, we need to continually reevaluate how we can best ensure an uninterrupted and secure supply to consumers. A quarter century ago, ensuring adequate and reliable supplies to customers were unchallenged business principles for refiners and distributors. Crude oil supply inventory at the front end of the refinery and products stocks at the back end were constantly adjusted to ensure adequate and reliable delivery.

With the advent of computerization, a more robust delivery system, "just in time" inventory management and Wall Street's emphasis on eliminating the cost of carrying non-productive assets, stock levels invariably began to decline. The reduction of stock levels improved financial performance and served to lower prices. It also depleted the cushion or excess in the system that we used to rely on in times of disruption or short supply. Working group discussions during the preparation of a recent report by the National Petroleum Council looking at refining and inventory issues conveyed the frustration of pipeline and terminal operators that with the expansion in product specs and boutique fuels, tighter delivery schedules and declining storage, tanks were often literally hours away from being emptied (until new deliveries arrived) and hic-cups in the system frequently resulted in temporary outages and/or higher prices.

As we move to a system of increased diversification of fuels and suppliers—including some from agricultural sectors that can be influenced by new risk factors like weather and drought—we will need to continually monitor and revamp our inventory policies and may need to provide additional incentives and assurances to investors to make sure needed infrastructure enhancements actually occur in a time frame that works.

Additionally, in the absence of new refinery construction, as product imports continue to increase, and faced with the prospects of more frequent and high intensity storms in the US Gulf and coastal areas where refineries tend to concentrate—all of which heighten the threat to refined product supply—we should evaluate the need for expanded product inventory in addition to relying on a crude oil reserve.

With specific regard to the management of the SPR, it should be noted that there are many instances where thoughtful decision making has resulted in actions that have preserved the core objective of the program while introducing creativity and flexibility in aligning those objectives with actual events in the market. Such exemplary actions include the suspension of previous fills in order to make more oil available to the market during times of supply uncertainty, Secretary Richardson's use of royalty oil to replace SPR volumes previously sold and rebuilding volumes in a time (1999) of notably low prices, Secretary Bodman's 2006 decision to delay the repayment of loaned oil volumes from the previous fall in order to ensure that refiners had adequate crude supplies to meet processing and product sales requirements and ease price pressure, and periodic swaps of oil to ensure that the crude in storage continues to match refiner needs and processing capabilities.

UNINTENDED CONSEQUENCES AND CONFLICTING POLICY SIGNALS

Before beginning this particular discussion, let me first commend the Members of this committee for their efforts in passing significant pieces of energy legislation in each of the last two Congressional sessions. In particular, I applaud your efforts in promoting improved energy efficiency and the development of supplemental alternative fuels while noting that more could be done to improve domestic supply opportunities.

But, as a cautionary note, let me also emphasize, particularly in this uncertain and volatile market climate, the need for more thoughtful and comprehensive policy directives and specifically the elimination of contradictory signals.

By way of illustration, let me just identify a few examples of this problem. In EPAct2005, Congress provided incentives for the construction/expansion of domestic refining capacity as a way to improve supply deliverability and enhance the reli-

[4] "US Government, Senate Democrats on SPR Collision Course," Reuters report by T. Doggett and C. Baltimore, February 6, 2008.

ability of domestic fuels delivery. After an extended period of excess capacity and poor economic performance, higher utilization rates and better margins were finally improving conditions for refiners and additions/expansions were beginning to gain traction. Yet, less than two years later, additional provisions were enacted into law that aim to reduce the need for petroleum based fuels and mandate their volumetric replacement by date certain by employing, in some cases, technologies that don't yet exist at scale or cannot compete without significant subsidies.

While accepting the policy advantages of such diversification, one needs to at least recognize the difficulty this change presents for businesses with shareholder responsibilities and investment projects underway. Faced with the prospect of declining demand for one's products and increasing environmental and construction costs, it is highly unlikely that many of these announced expansion projects will ultimately go forward as originally envisioned.

Further, in the case of projects which continue to progress—and a great case in point involves Motiva (a joint venture between SaudiAramco and Shell and the largest announced domestic refinery expansion)—the consequences of the adoption of NOPEC-type legislation can be directly contrary to the objectives of the EPAct2005 in terms of promoting security of supply and enhancing refining capability.

As we continue to expound on the benefits of secure energy supplies, driving resourcerich and reliable suppliers to invest elsewhere may ultimately result in redirecting supplies away from the United States to other joint venture operations around the globe.

Similarly, as we contemplate reducing reliance on oil as a way to mitigate the environmental impacts of hydrocarbons use, doubling the size of the SPR make little to no sense at all—and appropriating dollars away from conservation and efficiency programs to accomplish the expansion is both myopic and ill-conceived.

Thank you for the opportunity to appear before you today. I would be pleased answer any questions.

The CHAIRMAN. Thank you very much. Ms. Kenderdine, please go right ahead.

STATEMENT OF MELANIE A. KENDERDINE, ASSOCIATE DIRECTOR, STRATEGIC PLANNING, MIT ENERGY INITIATIVE, CAMBRIDGE, MA

Ms. KENDERDINE. Mr. Chairman, Senator Domenici, members of the committee, thank you for giving me the opportunity to testify today.

During my 8 years at DOE I had the opportunity to work with the SPR team. Many of them are in the audience. They are, in my view, some of the finest public servants in the Federal Government.

DOE recently lost the SPR Director, John Saugus, who's also here. His retirement—his gain is DOE's loss. I think that the Government should be proud of these public servants.

I am and always have been a strong supporter of a large and robust reserve as our primary line of defense in the event of an emergency oil supply disruption. Each day however, the current RIK program is pulling 70,000 barrels off oil off tight markets at a time of record high prices and volatile geopolitics. Attention to market conditions and the willingness to act in a more flexible and creative manner could achieve the same result but enable lower cost options for filling the SPR through time exchanges, for example. This could also help address other key energy priorities.

The purposes and implementation of the original RIK program in 1999 provides an example of such creativity. In late 1998 oil prices hit historic lows. While moderate oil prices are good for consumers, extremely low prices shut in wells, decimate the work force and destroy the technical infrastructure of the industry, impacts that ultimately lead to lower supplies and then higher prices in the future.

To help mitigate these adverse impacts the Clinton Administration established the RIK program. This provided a market outlet for domestic oil in a glutted market and enabled DOE without the need for new appropriations to replace 28 million barrels of oil in the SPR that had been sold 2 years earlier, largely at the direction of Congress simply to generate revenues. That was about $420 million of oil that we had to sell.

Quotes from the key policymakers at the time of the announcement bear repeating. Then Energy Secretary Bill Richardson said, "We are taking advantage of today's low oil prices to rebuild our Strategic Petroleum Reserve. Senate Energy Committee Chairman at the time, Frank Murkowski, said, "Buying oil back in the SPR would drawdown oil from a glutted world market and it benefits the country's small domestic producers."

These quotes emphasize a key driver for establishing the RIK program in the first place, taking advantage of low oil prices to get the best deal for the taxpayer. In this respect the current RIK effort is operating under market conditions that are precisely the opposite of those that the original program was established to exploit. In fact two Energy Secretaries and both Democratic and Republican Administrations elected to pursue the path of do no harm with the RIK program. Secretary Richardson in 2000 and Secretary Abraham in 2003 deferred deliveries under the RIK program for fear that removing even small amounts of oil from the market would increase prices to consumers.

Another authority where creativity and flexibility can and should be employed is exchanging oil to acquire oil. We first used this in a significant way to establish a home heating oil reserve in the Northeast in 2000. The rapid stand up of this reserve absent any appropriations, to do so, was accomplished by using this authority. I would just like to weigh in and support Mr. Verrastro and the notion of revisiting product reserves.

We also conducted a time exchange of oil in September 2000 when heating oil inventories in New England were 72 percent lower than in the previous winter. On September 22, the President directed the Secretary to conduct an exchange of SPR oil in effect loaning the market 30 million barrels of oil. The results were immediate. Stock prices dropped almost 20 percent. By the end of the year actual oil prices had decreased by 34 percent and there was adequate heating oil supplies for the winter.

Importantly, this exchange of 30 million barrels ultimately turned to over 35. Returned 5 additional—5 million barrels back to the Reserve, that's a 17 percent interest payment on that loan to the market. At today's prices this equates to an additional half billion dollars of oil in the Reserve at no cost to the taxpayer.

There is one more point I would make before closing. We typically gauge the insurance value of the SPR in total barrels of oil or days of import protection. An additional and critical data point is the SPR's drawdown capacity of 4.4 million barrels per day, a significant limiting factor in responding to disruptions. The incremental 13 million barrels destined for the SPR right now, contracts were just let in that amount, will do very little in the face of this limitation.

Mr. Chairman, the Energy bill passed last December established the foundation for alternative energy security pathways. Conservative estimates are that by 2022 provisions in that law will reduce net oil imports by well over two million barrels per day and rising thereafter in effect increasing the insurance value of the SPR without adding any oil to the Reserve. Between now and then however we need new ways to finance and develop key energy technologies.

According to GAO, DOE's total budget authority for energy R and D has dropped over 85 percent since 1978. Temporarily suspending the current RIK program could provide at least a billion new dollars to fund critical research programs. Such as large commercial scaled sequestration demonstrations or efficiency programs that have strong policy, analytical and bipartisan support.

Mr. Chairman, in closing the current policy of taking royalty oil in a continuous flow regardless of market signals, ignores many of the lessons learned over the last decade on how to use the SPR. It is literally a waste of taxpayer's money to put oil in the Reserve today, at today's top prices, when futures markets offer the same oil at a lower price 12 months from now. We need a clearer articulation of the value of a larger SPR relative to other policy options such as increased efficiency or alternative fuels.

I hope that this testimony has provided some food for thought in this regard and look forward to the committee's questions. Thank you.

[The prepared statement of Ms. Kenderdine follows:]

PREPARED STATEMENT OF MELANIE A. KENDERDINE, ASSOCIATE DIRECTOR, STRATEGIC PLANNING, MIT ENERGY INITIATIVE, CAMBRIDGE, MA

Mr. Chairman, Senator Domenici, Members of the Committee, thank you for giving me the opportunity to testify before your committee today. Let me start by noting that I am here as the Associate Director of the MIT Energy Initiative, but in the tradition of academic freedom, the views I express today are my own. In addition to my current position at MIT, I worked at the Department of Energy from 1993 through 2001. During that time, I was the Director of the Office of Policy as well as the Senior Policy Advisor on Oil, Gas and Coal to Secretary Richardson; policy aspects of the SPR were included in my portfolio.

I have been asked to address policy issues related to the Strategic Petroleum Reserve and specifically to discuss issues surrounding the Administration's current policy to fill the Strategic Petroleum Reserve utilizing the so-called Royalty-in-Kind or "RIK" program. This program provides a mechanism for the federal government to accept oil in lieu of federal royalty payments for industry oil production from federal lands.

AUTHORITIES FOR USES OF THE SPR

The SPR is our primary line of defense in the event of emergency oil supply disruptions. It also provides the U.S. with additional energy security assets over and above this essential function that can be utilized to support other energy policy objectives.

In general, the legal authorities for the use of the SPR include but are not limited to:

- Drawdown in the event of an emergency supply disruption, amount unlimited, Presidential finding required
- Drawdown in anticipation of a supply disruption, 30 million barrels limitation, Presidential finding required
- Test sale, five million barrel limitation, discretionary on the part of the Secretary
- An "exchange of oil to acquire oil", discretionary on the part of the Secretary
- A royalty-in-kind exchange program, administrative action
- Leasing space in the Reserve, administrative action

I highlight these authorities for three reasons.

First, it has been widely represented in the press and public domain that the SPR is to be used only in the event of an emergency supply disruption. It is worth repeating here today that this is not the case, as demonstrated by this listing of authorities. This misconception has caused us to undervalue a very powerful tool and to inhibit management flexibility that could maximize the value of the SPR to achieve energy and foreign policy objectives.

Second, each of these authorities was either extensively debated or utilized to support broader policy objectives when I was at DOE, and highlights the spectrum of SPR policy options that may be employed under certain oil market or security conditions.

Third, and equally important, these authorities create opportunities for Congress as it seeks to satisfy and balance competing energy policy priorities going forward.

TODAY'S OIL MARKETS VS. OIL MARKETS IN 1973

To fully appreciate this range of possible uses of the SPR, it is important to recognize the significant changes in oil markets since the time of the establishment of the Reserve.

- Oil markets have become more efficient. In 1973, the Nixon Administration had, since 1971, placed US crude and refined products under price and allocation controls. Markets were inefficient and uncertain, leading refiners to hold greater working stocks to meet demand. Today, markets are deregulated and market forces are deemed most appropriate for managing scarcity and risk. Oil supplies are more diversified, robust futures markets have evolved, and inventories are more tightly managed.
- The energy efficiency of the economy has improved. Oil intensity (unit of oil per unit of GDP) was relatively high when the SPR was established, but has improved significantly. In 1973, we used 1.45 barrels for each $1000 of GDP and now use 0.67 barrels for each $1000 of GDP—down 54% in 33 years.
- Oil consuming nations have built collective measures to address energy security. The formation of the International Energy Agency (IEA) led to the establishment of information collection and policy coordination mechanisms to collectively act on oil matters including a mechanism for a coordinated response to supply disruptions, and the establishment of large strategic reserves, both public and private.

In short, today's robust global oil markets and vehicles for collective action did not exist when the SPR and the authorities for its use were established. One could reasonably argue—and many do—that in today's markets, in which product and crude moves around the globe, and where markets manage price through scarcity and risk through market instruments, there are no true physical disruptions of oil, just price volatility in response to market conditions, resultant arbitrage, and transaction costs. To illustrate this point, after Hurricane Katrina devastated offshore production facilities, the Director of the Congressional Budget Office noted that ". . . if rationing is done through the price mechanism alone—energy use will tend to be put to its highest-value uses, and economic activity will not be seriously affected." (see letter from Holtz Eakin to Senate Marjority Leader Frist, September 6, 2005).

Indeed, the federal government has relied on such market forces to accommodate very large supply disruptions in the recent past. Two of the largest disruptions since the Arab Oil Embargo of 1973—the Venezuelan labor strike of 2002-2003, and the first year of the second Iraq war—resulted in sequential losses starting in December 2002 of 2.6 million barrels per day, followed immediately by a gross peak loss of 2.3 million barrels per day and sustained losses for the remainder of 2003 (See IEA Fact Sheet, DOE Office of Fossil Energy Website). In neither instance did the U.S utilize the SPR to minimize the impacts of these major shortfalls.

WHAT ARE THE TRIGGERS FOR USE OF THE SPR?

Historical experience shows that the trigger for using the SPR—based on the definition of what constitutes an emergency supply disruption—has been inconsistently interpreted and used. As noted, a peak loss of 2.3 million barrels of oil per day and a sustained loss of around a million barrels per day for almost a year after the start of the Iraq war in 2003 was deemed an insufficient disruption to trigger the use of the SPR.

Compare this to the response to Hurricane Katrina. According to the Minerals Management Service (MMS), Gulf of Mexico (GOM) oil production was reduced by a relatively modest 837,648 barrels per day, less than half the shortfall of the Iraq

war. In this instance however, the President made an emergency finding and the Department of Energy announced an offer to sell 30 million barrels of SPR oil.

Not all oil offered for sale in response to Katrina, however, was actually purchased (only 11 million of the 30 million that was offered)—a clear signal from the market that it did not need the crude oil the SPR was offering. Instead, what was needed was refined product as Katrina was much more devastating to refineries in the Gulf than to regional crude production. The U.S. energy markets were, however, able to essentially swap crude oil for European product, a transaction that hinged on the emergency declaration by the President.

The structure and nature of the Katrina response raises two concerns beyond that of consistent use of triggers for release of oil from the Reserve: the need to revisit the issue of product reserves as originally envisioned in the SPR organic statutes; and the requirements for an emergency declaration by the President. In this circumstance such a declaration was required to effect what was essentially a swap. More response flexibility on the part of the Secretary could expedite actions and help diminish the counter-productive market psychology reactions that come with Presidential emergency declarations.

SPR DRAWDOWN CAPACITY LIMITS RESPONSE

It is also important to understand the impacts of key operational features of the SPR as we consider the current RIK program to fill the Reserve. The SPR has a capacity of 727 million barrels of oil and currently holds around 698 million barrels. The DOE recently awarded three contracts to add an additional 13 million barrels of oil to the Reserve through the RIK program.

While the total number of barrels in the SPR or "days of import protection" is the gauge by which the public and policy makers typically measure the amount of import insurance the SPR provides the nation, an additional and critical data point for our emergency response capability is the SPR's drawdown capacity. This is currently around 4.4 million barrels per day (an untested number as the systems and commercial interfaces have not been stressed at a rate higher than one million bpd for a sustained period). Because drawdown capacity is fixed, at a certain point, total capacity or "days of import protection" becomes less important as the size of the SPR increases, because drawdown capacity is the limiting factor in our ability to respond to disruptions.

One could argue that in spite of the drawdown rate, larger volumes in the SPR could enable us to respond to disruptions over greater lengths of time. However, the incremental benefits are smaller because history demonstrates that we are not inclined to authorize a drawdown over long periods of time. Also, the Reserve can only maintain a drawdown rate of 4.4 mbpd for 90 days. After that the rate of production declines precipitously and the SPR inventory will be exhausted within 180 days whether the inventory is 700 million barrels or 727 million barrels.

REQUIREMENTS FOR STRATEGIC OIL STOCKS

The current case for filling the Reserve utilizing the RIK program, in spite of record high oil prices, hinges in part on the assertion that current capacity offers only 57 days of import protection, when the U.S is required to have 90 days of import protection as a participant in the International Energy Agency. However, the IEA 90-day requirement is based on total level of strategic stocks, including both government-owned reserves as well as privately-held stocks available for use in an emergency. Other IEA countries rely on privately-owned stocks, under varying degrees of government control, to meet some or all of their respective commitments. Indeed, the DOE SPR website indicates that the current U.S. inventory equates to 118 days of import protection as defined by the IEA. These volumes are reported to IEA on a regular basis and IEA periodically reviews them; presumably the 118 day figure on the DOE website reflects this process as well as official U.S. representations to the IEA.

The Administration is also responding to EPACT 2005 which directs that the Reserve be expanded and filled to a capacity of one billion barrels. In this regard however, the statute provides DOE with significant latitude in the timing and manner in which this requirement is met. There are strong supporters for such an expansion, particularly for expanding its storage capacity, myself included. There are however many available tools to achieve this end in ways that avoid potential and real adverse impacts on American consumers.

The analysis supporting the DOE Environmental Impact Statement for proposed expansion of the SPR to one billion barrels was conducted prior to the passage of key energy laws which would both increase unconventional domestic oil supplies and reduce oil demand in the future. These new policy tools could have a material

impact on the need for SPR expansion or, at a minimum, both the manner and rate at which this expansion occurs.

A RANGE OF USES OF THE SPR

I would also like to briefly discuss four actions that utilized the SPR during my tenure at DOE with relevance to today's hearing. These are: the Congressionally-directed sale of $420 million worth of SPR oil in fiscal years 1996-97; the related development and implementation of the original RIK program in 1999; the creation of the Home Heating Oil Reserve in the Northeastern US and; the exchange of 30 million barrels of SPR oil in September of 2000.

- Directed sales of SPR Oil.—In appropriations bills in 1996, the Congress directed the sale of $420 million worth of SPR oil in the absence of any market anomaly, disruption or product shortfall; the sole purpose of the directed sales was to generate revenues for purposes not related to energy security. Around 23 million barrels of SPR oil were sold to meet the statutory direction and requirements to sell the oil within a fixed timeframe; as such, SPR managers were constrained in their efforts to get the best value for the taxpayer.

  In that same timeframe, the Weeks Island SPR storage facility showed signs of potential failure and needed to be decommissioned. This occurred after the Administration's budget for the fiscal year was set. To avoid a catastrophic failure of the facility which would have compromised the oil in the cavern and caused environmental harm, the department proposed and the Congress authorized DOE to sell five million barrels of oil to pay for this decommissioning. The combined total of SPR oil sold during calendar year 1996 was around 28 million barrels.

  In addition, in 1997 as part of the appropriation for FY 1998 Congress directed additional sales for the purpose of generating revenue, although this action was effectively overturned (see below).

- Use of the RIK Program to Prevent Shut-in of Domestic Production.—In late 1998, oil prices hit historic lows, with WTI bottoming out at $8.73 per barrel. The Economist Magazine's cover headline at that time was "$5 Oil Forever?"

  Lower oil prices are good for consumers and the global economy. However prices at extremely low levels such as those in late 1998 force wells to be shut in, discourage necessary investment in research, exploration and production, decimate the workforce and destroy the technical infrastructure of the industry—impacts that ultimately lead to lower supplies/higher prices in the future. Such impacts were strongly felt in producing regions of the country—Texas, New Mexico, Louisiana, Alaska, Colorado, Wyoming, etc.

  Congress responded by passing an emergency appropriation act allowing the Department of Energy to stop oil sales from the SPR that had been directed in the FY 1998 appropriations bill, if the President found that the situation was an emergency. President Clinton made the requisite finding and the sale of oil for FY 1998 was cancelled.

  More proactively, the Administration activated the transfer authorities for DOE to take oil owed to the Department of the Interior as royalty from Federal leases. The establishment and implementation of the RIK program in 1999 served two purposes: it provided a market outlet for domestic oil in a global market that was glutted; and it enabled DOE, without the need for new appropriations, to replace the 28 million barrels of oil in the SPR that had been sold two years earlier. At the time of the announcement, the SPR held 561 million barrels of oil; when the RIK exchange was completed, the SPR would have contained around 590 million.

  Direct quotes from the key policy makers at the time of the announcement bear repeating [see DOE press release, January 11, 1999]:

- Then Energy Secretary Bill Richardson: "We are taking advantage of today's low oil prices to re-build our strategic oil reserves . . . By putting royalty oil in the Strategic Petroleum Reserve today we will get a high rate of return tomorrow—enhanced national energy security, increased strategic assets—and a very good deal for the American taxpayer." [emphasis added]
- Then Senate Energy Committee Chairman, Frank Murkowski: ". . . Buying oil back into the SPR is a win-win-win. It would bolster America's energy security, it would drawdown oil from a glutted world market and it would benefit the country's small domestic producers." [emphasis added]

- Senator Bingaman, then-ranking member of the Senate Energy Committee: "With oil prices at an all-time low, now is the time to strengthen our national energy security by replacing the oil we've drained from the Strategic Petroleum Reserve." [emphasis added]

Each of these key policymakers emphasized—in addition to the positive security implications of the program—that a key driver for this program was taking advantage of low oil prices to get the best deal for the taxpayer or taking oil off a glutted market, presumably to have some price impact. The major oil trade associations similarly applauded the action as a way to lower the glut of oil on world markets and assist the industry at a time when it was reeling from historically low prices. Current efforts to fill the SPR with RIK oil are occurring under market conditions that ensure the opposite result of the program as it was originally envisioned.

It is also important to note here that Secretary Richardson directed the SPR office to defer deliveries to the SPR under the RIK program when prices started to rise sharply. His motivation was concern that pulling even small amounts of oil off the market (at that time, about 100,000 barrels per day) would increase consumer prices.

- Establishment of a Home Heating Oil Reserve.—The winter of 1999-2000 was mild until a late cold snap placed huge demand on heating oil supplies in the Northeast and New England. The EIA Administrator warned that without a break in the weather the region would run out of heating oil. DOE began daily monitoring calls with the requisite state officials and reviewed curtailment options but beyond this, had very few tools at its disposal to address this potential crisis. Fortunately, the weather broke and the significant heating oil price spike in the U.S. attracted supplies from Europe, which arrived in time to avoid a crisis.

  This vulnerability of the region to supply shortages prompted calls from elected officials and some within the Administration to establish a regional heating oil reserve. The White House ultimately sided with these officials and ordered the creation of the Northeast Heating Oil Reserve in the summer of 2000. The rapid stand-up of this reserve, absent appropriations to do so, was accomplished by using the authorities that allow DOE to "exchange oil to acquire oil."

I highlight this action for two reasons: first to demonstrate some of the energy policy objectives that can be met through creative application of SPR authorities. Second, it underscores the possible need for additional product reserves. When the SPR was authorized, it contemplated the possibility of product as well as crude oil reserves. At the time of the SPR's first plan, it was determined that product reserves were too expensive, there was a robust refining industry and significant product stocks, and that the real need was for a crude oil reserve. Since that time, the refining industry in the US has operated at a much higher utilization rate, just-in-time inventory practices eschew the holding of product inventories, and imports of refined product have increased fairly dramatically. Product reserves present a range of difficulties as product does not store over time and must be swapped out on are regular basis. As we consider SPR expansion however, it might be worth studying the inclusion of strategically located product reserves as part of any SPR expansion plan.

- Use of an SPR Time Exchange in September, 2000.—As noted, heating oil inventories were a major concern throughout 2000 and were closely monitored by the federal government. Notwithstanding political charges made prior to the Presidential election in November, a range of options had been discussed within the Administration as early as April of that year.

  While the new heating oil component of the SPR gave the country more emergency stocks in the fall of 2000, commercial inventories of heating oil were still dangerously low. In August, 2000, heating oil inventories in the Northeast Region were around 40% lower than the previous winter (when we faced the prospect of running out); in the New England sub-region, they were 72% lower. In addition, oil prices were increasing in spite of OPEC's actual or announced production increases of almost three million barrels since March of that year.

  After a review of all options, consultation with IEA and other allies, and a determination that refining capacity was sufficient to accommodate additional oil, on September 22nd the President directed Secretary Richardson to utilize SPR exchange authorities to conduct an exchange of SPR oil, in effect loaning the market 30 million barrels of oil, with the potential for loaning an additional 30 million.

> The results were immediate, in spite of the fact that oil had not yet moved into the market (demonstrating the psychological impacts on the market when the U.S. signals its intention to act). All of the oil was refined in spite of charges that there was insufficient refining capacity; there were adequate heating oil supplies for the winter. In addition, the exchange backed out cargoes on their way from Europe to the US, in effect, reducing pressure on overheated markets and prices on both sides of the Atlantic. In this regard, oil spot prices dropped almost 20%, from $37.22 to $30.26 a week later. Prices stayed down until the bombing of the Cole on October 12. By the end of the year, actual oil prices had dropped from $30.94 to $20.38 per barrel, a 34% decrease.
>
> Importantly, as we discuss using SPR authorities to increase the size of the Reserve, the 2000 exchange of 30 million barrels of oil loaned to the market ultimately resulted in a return to the reserve of 35.1 million barrels (after the original 1.35 million barrel premium from the exchange, a series of contract deferrals ultimately brought the total to 5.1 million). This, in effect, represented a 17% interest payment on the loan and, at today's prices, equates to an additional half billion dollars of oil in the Reserve at no cost to the taxpayer.
>
> It is also worth noting that the deferrals involved in this transaction took place over several years; the 2000 time exchange was not completed until 2004. In fact, contract deferrals for SPR oil are common practice. The SPR website notes that:
>
> > On several occasions, the Energy Department has agreed to reschedule incoming oil shipments to the Reserve at the request of contractors, deferring the deliveriesfor several months to a year or more. In these instances, companies under contract to deliver crude oil to the Federal Government agree to increase the volume of oil delivered to theReserve at the later date at no additional cost to the taxpayer. The additional volumes, or premium barrels, aresimilar to interest payments.

IMPACTS OF CURRENT RIK PROGRAM

The current RIK program is pulling 70,000 barrels per day off oil markets at a time of record high prices, very tight supply/demand balances, and high geopolitical volatility. Attention to market conditions and the willingness to act in a more flexible and creative manner could afford lower cost options for SPR fill through time exchanges and other measures. Moreover, as I noted earlier in my statement, the current RIK program provides very little incremental insurance value.

I offer several sources of information, anecdotal evidence, and past Secretarial actions for the Committee's consideration.

- The 2000 time exchange is instructive in this regard. While it involved putting oil on the market as opposed to taking oil off the market, it demonstrated how a very small amount of oil compared to world market totals (30 million barrels into an annual oil market approaching three billion barrels) could have a major impact on price.
- This point was also driven home by Alan Greenspan's testimony before the Senate Finance Committee a year ago in which he noted that: ". . . the balance of world oil supply and demand has become so precarious that even small acts of sabotage or local insurrection have a significant impact on oil prices."
- Last week when oil prices topped $100 per barrel for the first time, the New York Times article on February 20, 2008, noted from its discussions with traders that "The immediate cause that sent prices up today was the fire at a Texas refinery . . . [which] will halt processing of about 70,000 barrels per day for several weeks at least."
- The same trade associations that strongly supported the initial RIK program, (a type of exchange) which removed oil from the market when prices were at historic lows, opposed the 2000 exchange which put oil onto the market when prices were relatively high.
- Phillip K Verleger, a well-known petroleum economist, cited Goldman Sachs in testimony on the impacts of the RIK program from 2001-2004, noting that:

> . . . Goldman Sachs economists made the following statement: Government storage builds have lowered commercially available petroleum supplies. OECD strategic petroleum reserves built in excess of 51 mmb during 2003 (40 mmb in the United States alone), which reduced commercially available supplies by the same amount and lowered the inventory coverage ratio. We estimate that these builds alone have supported crude oil prices by $2.25/bbl.

While respected analysts disagree with some of these conclusions, two Energy Secretaries in Democratic and Republican Administrations elected to pursue the path of "do no harm" when confronted with increasing oil prices and an active RIK program. Both Secretary Richardson in 2000 and Secretary Abraham in 2003 chose the path of prudence and deferred deliveries under the RIK program for fear that removing even small amounts of oil from the market would increase prices to consumers.

FUTURE SPR POLICY ISSUES AND OPTIONS

Expanding the size of the SPR, while an important undertaking, is a very expensive proposition. The current DOE program threatens to place additional and unnecessary burdens on consumers, who are already weighted down by historically high energy prices. The use of RIK oil to fill the Reserve in the current environment calls into question many issues about the SPR, including:

- Inconsistent Past Practices on SPR Use.—Confusion exists about the size and duration of a given disruption that triggers emergency disruption responses and authorities, raising questions about the need for expansion, certainly about the urgency of the need. Clarification of the policy underpinnings for the rapid expansion of the SPR currently being pursued by the Administration is warranted, when the law directing it to do so provides significant latitude in this regard, and triggers for the use of the Reserve are inconsistently applied.
- The Rate vs. the Length of Drawdown.—The practical as well as security impacts of limited drawdown capacity, its relationship to IEA requirements, and the need for additional import protection are not well understood or appreciated. Is the development of additional drawdown capacity (beyond expected demand increases) an investment worth pursuing?
- Petroleum Product vs. Crude Oil Reserves.—We have significant evidence of product as opposed to crude disruptions and shortages, as seen in both Katrina and the run-up to the exchange in 2000. Are there changing refining market/industry conditions including increased product imports that point to the need to re-visit and study product reserves as part of any contemplated expansion of the Reserve?
- Better Leveraging of the SPR as an Asset to Support Energy Policy Objectives.—There appears to be a need for greater Secretarial authority and flexibility to use the SPR in ways that enhance the value of the SPR while minimizing market impacts, taxpayer costs, and consumer burdens. Also, are there reasonable uses of the Reserve that should not require emergency declarations and, if so, do authorities need to be revised?

Related to the last point, GAO convened a group of policy experts to analyze the size and uses of the SPR, including fill policy and made a series of recommendations on SPR size and fill; many of these bear repeating. Specific to RIK, they indicated that the current "steady volume approach of the RIK program" has effectively cost the taxpayer an additional $590 million for the same amount of oil. They recommended instead that we "fill the SPR more cost-effectively, including acquiring a steady dollar value of oil for the SPR over the long term, rather than a steady volume, to ensure a greater volume of fill when prices are low and a lesser volume of fill when prices are high." In essence, the GAO is suggesting that application of a "dollar cost averaging" investment philosophy would increase its longer-term value to consumers [See GAO Report 06-872].

They also suggested greater flexibility in the RIK program, giving industry the ability to delay deliveries in tight, backwardated markets (backwardation is the condition under which the price of future deliveries for the commodity is below the price for present (or spot) deliveries. Especially relevant to many of the issues raised in this testimony, they recommend that we "periodically reassess the appropriate size of the SPR in light of changing oil supply and demand in the United States and the world."

REASSESSING THE VALUE OF ADDITIONAL SPR INSURANCE IN A CHANGING ENERGY FUTURE

This takes me to my closing points. Policy and research leaders are increasingly faced with the need to balance competing energy concerns: the need for energy security that comes, in part through the insurance provided by the SPR; as well as providing for an energy future in which such insurance will no longer be required (or required to a lesser degree).

Specifically, the Energy Independence and Security Act of 2007 established the foundation for alternative energy security pathways. Indeed, the Renewable Fuels

Standard and new CAFÉ requirements have the potential to significantly reduce oil imports, in effect reducing pressures on the SPR as the only option for ensuring oil security. Conservative estimates provided by the Secure America's Energy Coalition show that this new law would reduce net oil imports by 1.75 million barrels per day by 2020, increasing to 2.26 million barrels per day in 2022 and rising thereafter. These estimates represent roughly half of the theoretical SPR drawdown capacity of 4.4 million barrels per day. They also increase the number of days of protection afforded by a given quantity of oil in the Reserve. Thus, the new Energy bill could, over time, increase the insurance value of the SPR, even if the actual inventory level is frozen or slightly decreased.

We also need new ways to finance the research, development and demonstration of key technologies to enhance our energy security and sustainability and mitigate the impacts of climate change. The GAO has documented that DOE's total budget authority for energy R&D dropped by over 85 percent (in real terms) from 1978 to 2005. While Congress continues to authorize new and expanded critical energy research programs, it is apparent that the current Administration will not pay for these programs, and has opposed efforts by Congress in the last appropriations cycle to increase energy R&D investment levels. Suspending the current SPR fill program in ways that result in a positive budget score could provide a new source of funding of at least a billion dollars of key research programs such as carbon sequestration demonstrations or efficiency programs that have strong policy, analytical and bi-partisan support.

In short, we need a clearer articulation of the value of a larger SPR relative to other policy options such as increased efficiency or the introduction of alternative fuels that would reduce oil consumption. I hope that this testimony has provided some food for thought in this regard and look forward to the Committee's questions.

Thank you.

The CHAIRMAN. Thank you. Thank you all for your testimony. Let me start with a few questions and then defer to others here.

Let me ask you, Ms. Fredriksen, about the suggestions that the General Accountability Office has in their testimony. Mr. Rusco has made three suggestions, as I understand it. Very briefly, he suggested that we should be buying more heavy oil into the SPR.

Second, that we should be buying the oil on a dollar-cost averaging basis where we spend a specific amount each day for oil rather than buying a specific quantity of oil each day as I understand your recommendation. Third, that we quit trading royalty oil instead of just buying it in the market that is a system that is not serving us well and is not properly auditable and we don't know whether we're getting what we're hoping to get out of that or not. What's your reaction? What's the Department of Energy's reaction to those three recommendations?

Ms. FREDRIKSEN. Thank you, sir. In response to the question or the position on heavy oil, I think I tried to make that clear in my testimony that we do plan to consider the expansion. Our expansion plans to the one billion the creation of our ability to handle heavy crude oil.

It does have management challenges that are unlike handling sweet and sour crude and the underground cavern. It also minimizes the amount of capacity that we would have available. So that is why the Department did the study. We do have plans to include that in our expansion of analysis.

As regards to the study dollar verses the——

The CHAIRMAN. Let me just interrupt there. You don't think it makes sense to change the mix of oils that you're purchasing at this time?

Ms. FREDRIKSEN. There's only 11 refineries out of 150 that can process heavy crude oil in the United States currently. So we do recognize that a disruption in heavy crude oil imports would actu-

ally impact those refiners. Although they could still process the crudes that we do have in the SPR, it would be at a lesser amount of refined product that they could produce from those refineries.

So we do want to provide that import protection for those 11 heavy crude oil refineries.

The CHAIRMAN. I didn't understand. Is that a yes or a no? I mean, do you think it makes sense to change the mix? As I understand——

Ms. FREDRIKSEN. Yes. That is why we're going to plan to do that in our expansion to the one billion.

The CHAIRMAN. But not at the current time.

Ms. FREDRIKSEN. Not in our current reserves.

The CHAIRMAN. Why not?

Ms. FREDRIKSEN. Due to the one, the limitation and the capacity that we have available at the 727 heavy crude will take up more volume in those, leaving less reserves therefore less net import protection, our consumption protection. Two, it does offer management challenges. It is a little harder to store and manage and actual to distribute. So we have to address those and that's what part of our expansion plans.

Does that answer your question, sir?

The CHAIRMAN. Yes. You can go right ahead with the other two suggestions. What are your thoughts on those?

Ms. FREDRIKSEN. On steady volume verses steady dollar the Department has a policy that relies on a clear, transparent expectation that the markets can't understand. We believe that steady volume provides that protection. It's a minimal amount of oil, less than one tenth of 1 percent of the world production capacity, current volumes.

It is at a steady amounts. We announce—we do a preannouncement. It's for a 6-month period of time. Therefore we can fill our SPR for the protection reasons that we do need that SPR.

The CHAIRMAN. OK.

Ms. FREDRIKSEN. OK. On the third one which was the royalty in kind verses direct purchase. As Congress sees to appropriate funds to allow for direct purchases back in the mid '90s, which is why the Clinton Administration instituted the RIK program.

That RIK program has been used to steadily fill. It undergoes the—before any acquisition or from a direct purchase or a RIK transfer of asset. It still undergoes a market analysis that we have to conduct to ensure that the market can handle that transfer of oil.

We still have the $584 million from the sales following Hurricane Katrina that will be used for direct purchase. So the Administration has not put in an appropriations request for additional funding at this time. Because we still have that money left to use.

The CHAIRMAN. Let me just understand. Why isn't that money being used today rather than taking it royalty in kind?

Ms. FREDRIKSEN. Um, we——

The CHAIRMAN. I understand Mr. Rusco's suggestion is that you go ahead and use that money and then request Congress continue to appropriate money so we can just go ahead and buy the oil we need.

Ms. FREDRIKSEN. We did go out last year with a bid offer for two different occasions to repurchase that 11 million barrels using that money. At the time it was about a year ago at this point, March-April timeframe. We determined that the market conditions, the amount of production capacity, the amount of inventories and the amount of refined product on the market was insufficient in the advent of a driving season, the summer driving season. The bid that we received were not appropriate we felt for the market. We chose not to purchase at that time.

We have notified Congress in our FY 2009 budget submission that that is a plan that we will pursue this year, if market conditions can support that.

The CHAIRMAN. What I'm not understanding is if you take the royalty in kind, aren't you essentially buying the oil at the price you could turn around and sell that royalty in kind for?

Ms. FREDRIKSEN. That's a transfer of an asset from the Treasury Department to the Department of Energy verses a direct appropriation for an expenditure for direct purchase.

The CHAIRMAN. But from the perspective of the American taxpayer, I mean, if you take a barrel of oil in kind when the price of oil is $100 a barrel, you are essentially purchasing a barrel of oil for $100. Am I not right?

Ms. FREDRIKSEN. I think it's a little complex and I would like to be able to provide a written response to that question that will give you a much better response from our economists and our SPR office.

Senator DORGAN. Mr. Chairman, would you yield on that point?

The CHAIRMAN. I'm glad to.

Senator DORGAN. The simple answer, not very complex. The simple answer is they're putting $100 barrel oil underground. That's the value of the oil that they're sticking underground. Absolutely. It's the same as buying it for $100 a barrel.

The CHAIRMAN. Thank you very much.

Senator Domenici.

Senator DOMENICI. Sorry. That may be the simple answer and I don't challenge or question you, but I think if she wants to answer it another way in writing because she thinks there's something important, then she should be permitted to do that.

Senator DORGAN. I agree.

Senator DOMENICI. So you will do that. Don't do it for me. Just do it for the committee.

[The information referred to follows:]

The Royalty-in-kind program exchanges an asset from one Federal agency to another. The quantity of exchange oil delivered to the SPR is calculated relative to the value of the royalty oil the contractor received and thus is independent of market price level.

Furthermore, the potential revenue that the Government would otherwise receive if the royalty oil was sold is not forgone in this exchange. The exchange oil placed in storage is an asset which retains its full value to the Government. Revenue is simply delayed until such time as the oil is sold. Historically, when oil has been sold from the SPR it has led to a substantial return on the initial investment.

Ms. FREDRIKSEN. Thank you, sir. I will.

Senator DOMENICI. All right. Let me ask, Mr. Verrastro. We've seen oil reach prices that I assume you and I would not have ex-

pected—$100 a barrel of oil—at this point in history. Is that a fair statement?

Mr. VERRASTRO. I think that's a very fair statement, Senator.

Senator DOMENICI. Yes, but the thing that intrigues me the most is that you keep having experts advise those involved in America's energy destiny that prices might come down in a big way sometime. They put dollars up there and say in 10 years it might be 50 or during a 10-year period it might go down to an average of 70. Those are all over the place.

You don't agree with those who are predicting that there will be a large decrease in oil over the next 20 years, do you?

Mr. VERRASTRO. No, Senator. I think that two things are happening here. If you have flexibility to purchase when you want or select when you start filling, the market does move back and forth. It was $50 at the beginning of 2007. It moved to $100 by the end of the year.

There's a strong belief that OPEC at this point, if prices stay at this range, $95 to $100, OPEC will not cut production. As a result of that when you look at the second quarter demand drop, my suspicion is that prices will ease back from where they are today. U.S. stocks are in pretty good shape. Gasoline stocks are in pretty good shape.

Senator DOMENICI. But——

Mr. VERRASTRO. But I also make the case that by 2009 you could have a surplus.

Senator DOMENICI. But, sir.

Mr. VERRASTRO. Projects come online and demand affects the consumption that you might actually have a price drop. But, yes, predicting it, a dollar value at any point in time. We haven't been particularly good at it.

Senator DOMENICI. No.

Mr. VERRASTRO. I suspect we won't be.

Senator DOMENICI. Even if you're talking about the change, you're not really talking about large change that would remain over any sustained period of time. We're living in an era of high prices and those who supply it know they'll get paid high prices. It looks like that on the demand side, in particular because of India and China, we're in there at the trough using more than we ever have.

It looks like, unless something disastrous happens to the world we're going to continue to pay a very high price for energy, is that——

Mr. VERRASTRO. We're definitely in a higher price environment than we've seen in the past, definitely, Senator.

Senator DOMENICI. Right. Energy as it pertains to crude oil.

Mr. VERRASTRO. Yes.

Senator DOMENICI. If that's the case, then I don't understand why filling the SPR was good, but now it's not good.

Mr. VERRASTRO. I think there's two points. One is the timing on when you put, as Senator Dorgan or Senator Bingaman said. At this point at $100 oil if you're putting it in the ground, I think you're actually exacerbating the price movement.

You have more takers from the market then you——

Senator DOMENICI. But what is exacerbating going to do to the price when it's such a small amount of the demand?

Mr. VERRASTRO. I don't think it's volumetric, Senator. This idea that——

Senator DOMENICI. It's not volumetric.

Mr. VERRASTRO. 100,000 barrels a day in an $86 million a day market. I understand the arithmetic of that.

Senator DOMENICI. Yes.

Mr. VERRASTRO. But I believe if you're not willing to put more oil out there and you believe that a tight market exists, you should be putting more oil in the market, not taking oil out of the market.

Senator DOMENICI. Do you have evidence that such a small amount would cause these big problems?

Mr. VERRASTRO. Senator, we had a refinery go down a week ago.

Senator DOMENICI. Yes.

Mr. VERRASTRO. 70,000 barrels a day and the price of crude jumped $2. It's a disproportionate increase relative to the volume. But that's not what's moving this market.

Senator DOMENICI. How long did it stay there?

Mr. VERRASTRO. No, it drops back. I mean the price has been moving. We've been in a $85 to $100 weigh in for about the past 2 months.

Senator DOMENICI. So, the 70,000 barrel accident didn't have a very significant impact in terms of lasting effects?

Mr. VERRASTRO. In terms of the staying price, right.

Senator DOMENICI. So if we are going to fill the SPR why would you conclude that it would be any different than what we just saw? If there was a fluctuation it's going to be just for a while and it would go back.

Mr. VERRASTRO. I think it's two sides, Senator. I think one side is that if you decide that you're not going to use the Strategic Reserve. I think that the Administration, while there hasn't been an articulated policy on volumes except for Vice President Cheney's statement of the five or six million barrels, that there's a presumption that it's not going to be used. If it's not going to be used in a tight market there's no penalty for people to talk the price up.

We did an analysis back in 2004. We took Ivan and Katrina and Rita out of the analysis. So this is a time when prices were going to 50 for the first time.

Senator DOMENICI. Yes.

Mr. VERRASTRO. The wonderful old days. Over that summer the price moved from 36 to 50. Nothing happened in the market.

There was concern about UCOS, concern about the Venezuelan referendum. There was a small strike in Nigeria. In 3 days at the end of August, beginning of September, we had a standoff at Mjaf, so it looked like Iraq wouldn't come apart at the seams. We had President Clinton saying that no matter what happens to UCOS that the Russians would continue to export. Claude Vandeel made a statement that if prices exceed, you know, $50 we'll consider drawing down the IEA and stocks dropped, their prices dropped $9 in 3 days. That's not fundamentals.

So by making statements that you're continuing to take oil off the market in a tight market. Especially when you've just talked

to OPEC, both the President and Secretary Bodman about increasing supply. I think it undermines one's credibility.

The Chinese is a great example. The Chinese announced stock bills. When the price goes high they say we're going to suspend that. A lot of times they keep on buying, but they announce that they're going to suspend ESA prices. They continue to buy, but now they're buying at a lower price. It's just smart management of what you do when you have a tight market.

Senator DOMENICI. I just want to say to my friend who's taking the lead on this, Senator Dorgan, I see a reason for doing this that I have not said yet said anything about. But I might just say it. If we don't do this we would have some money to spend on something else which is not too bad. You'd be in charge of spending it.

So that I've been thinking that I'd be your brother until you got me there and going on. So that would be nice. But actually I believe that this is a dangerous world and I don't think we can predict when something can happen that demands that we use that Reserve without anybody being talking about whether they will or they won't. I mean things could happen next week that belie everything you've said and we will use it and we'll be glad we have it.

Mr. VERRASTRO. Oh, I'm glad we have it, Senator. Let me make one comment. In my statement the idea of setting a price range that you won't buy back until the price reaches or drops to $50, I think that's probably unrealistic in the current market.

Senator DOMENICI. You bet.

Mr. VERRASTRO. But the idea that you ought to have some flexibility and just manage it correctly, I would stand by my statement.

Senator DOMENICI. Ok. I thank you. Thank you.

The CHAIRMAN. Senator Menendez.

Senator MENENDEZ. Thank you, Mr. Chairman. Ms. Fredriksen, I'd like to pursue with you some of these concerns. I mean, it seems to me it makes no sense to fill the Reserve when all oil prices are at an all time high. Not only that when the Administration is talking about doubling its size to 1.5 billion barrels and beyond the question of the cost at this high rate now, what does that say about your vision, meaning the Department's vision and the Administration's vision for the future?

You're planning a future in which we have doubled our oil imports. A future where we are more dependent than ever on oil and if that is the future we build, the one thing we can be assured of is that oil prices will continue to rise, so will the temperature of the planet. Is that really the Department's long term plan?

Ms. FREDRIKSEN. As I stated in my opening testimony, sir, that it's a contextual approach. One is the fact that we have a reality of our imports are at 60 percent of our consumption. We must address that for national and energy security reasons.

But we don't stop there. Clearly this Administration has endorsed the use of alternatives: alternative vehicles, alternative fuels. We've supported the increase and Congress passed and the President signed into law the increase in their noble fuel standard.

All designed to lessen our dependence on foreign oil. We've increased CAFE standards. We're working to put into regulations——

Senator MENENDEZ. But that, first of all, we would be better off putting the resources behind making the alternative energy oppor-

tunities a reality. Because what you send a message. This is what I don't understand.

You send a message on one hand that you supposedly support these things. Then on the other hand you want to increase the overall capacity by 1.5 billion barrels. That sends a totally different message, a totally different message, especially when we're paying $100 a barrel.

How do you reconcile that? Just give me a brief answer. How do you reconcile that?

Ms. FREDRIKSEN. We reconcile it because the President feels that our national and energy security, are most important to this country following our experience on 9/11. He has directed us to fill the SPR to its capacity as expeditiously and practicable as possible.

Senator MENENDEZ. Filling it to its capacity is one thing, doubling its size is totally another. Ms. Kenderdine, let me ask you, in your testimony you explain how energy efficiency measures such as the CAFE standards, which we passed last year, reduce the amount of the oil that we need to import. But also increase a number of days of protection afforded by the Strategic Reserve. I'd like you to elaborate on that idea.

The President wants to double the size of the Reserve as I was just speaking to Ms. Fredriksen, with $100 a barrel oil. That would cost us about $75 billion for the oil alone. If one were to extrapolate at the present course.

Now, for example, we had the Secretary of Energy here. They eliminate the Weatherization Program. That in my home State of New Jersey produced very effective results in reducing our demand. Wouldn't it be smarter to look at some of the $75 billion on alternative energy sources and conservation then putting it into doubling the Reserve?

Ms. KENDERDINE. Yes, sir. As I said in my statement if you suspended just the current RIK program where there's 13 million barrels that they intend to put into the Reserve. If you temporarily suspended that and you structure, the scoring on that is very difficult. We've been round and round on that.

But if you could structure it in a way that it scores correctly and the scoring is complicated by EPACT '05 which directs the fill of the SPR. There are however, significant caveats in that legislation or in the statute that would—it's not directional. So if you got this to score correctly, it would be a billion dollars.

I spent a lot of time looking at different ways that, you know, I would spend the money if I were chairman of the Appropriations Committee or Energy and Water Appropriations Committee and have my own views. But I think efficiency would be critical. Alternative fuels obviously, because here talking about displacing oil.

But as I said in my testimony the SAFE, Securing America's Future Energy, did an analysis of the bill and said that if by 2022 you could save 2.2 million barrels of oil per day. I went through and tracked the demand increases and surprisingly enough the demand increases over the next 20 years. According to EIA forecast demand for oil are not that great because they are factoring in some of those things. So I think it is a wise investment to put more money into what you would get greater savings over time.

So I'm a strong advocate of that. I think that the Strategic Petroleum Reserve is a fundamental part of our energy security. It's important. I think it's a very large Reserve. It's the largest in the world.

Throwing out the 58 days of import protection, it's a somewhat meaningless statistic if you look at drawdown capacity as well as the IEA definitions of import protection. The DOE Web site says we have 118 days. So I think that it is a—you want to fill it over time, expanding it to a billion barrels is fine.

Do not affect the market or prices. Don't pull oil off tight markets. Don't put $100 oil in the ground and try to figure out how to balance the energy priorities that we have. I would invest some money in alternatives, sir.

Senator MENENDEZ. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Barrasso.

Senator BARRASSO. Thank you very much, Mr. Chairman. I do support the goal of promoting America's energy security. It is very important. We continue to become more and more reliant on imported fossil fuels.

Ms. Fredriksen, that chart that you showed illustrated clearly that even though you're putting more into the Reserve over time, the number of days available has dropped. It's because of our consumption. Not that you're not saving as much.

But I really get into the issue of accountability. That's what people in Wyoming want to know about. The people in Wyoming are no strangers to the impact of $100 a barrel for oil and what that does to their weekly budget, to their pocketbooks, and wallets.

In Wyoming, we rank highest in terms of the amount of miles that we drive. The distances are long. So people notice it at the pump. Talking to the guard at the airport yesterday in Casper, Wyoming—what he knows is what it now costs, you know, to go out to go hunting verses coming back because of the amount of money at $2.89 a gallon in Wyoming for gasoline.

It costs a lot to heat a home in Wyoming. We have a number of cold days. It's a cold climate. So there's that impact. So I think I need to ask questions that make sure that the taxpayers are getting their fair share on this and getting the right deal. So those are the questions that I want to ask.

It seems that this move to go to a higher volume from what, about 750 million barrels now or 727 to get to a billion and then a billion five. At these high prices, I mean, it's either because we believe that the prices are going to go up or we think that there is an immediate threat. I don't know if it's one or the other. If you like to first address that.

Ms. FREDRIKSEN. First, it's an issue of the law since we're required to get to the one billion. We've asked for the necessary appropriations to do those expansion activities. On the filling to the capacity of 727, it's not at the expense of investing in our energy future with renewables, with alternative technologies.

Certainly the Department spends, the U.S. spends the most amount of money on energy technology, R and D, of any country in the world, which is proper as the largest energy consumer in the world. We have to be leaders in that respect. So our filling of the Reserve is a commitment we have for energy security protection.

But we do not take that responsibility, that fiduciary responsibility lightly. As I stated we conduct a thorough market analysis before doing either an RIK or going out for a direct purchase from the market. We look at all of the factors.

The factors of capacity, the factors of production capacity, refining capacity, what do the inventories look like, will the market sustain this without an exacerbated impact. We have found on these occasions, last year and this year, for our RIK filling that we will not have an exacerbated impact on the market. So we have commenced those RIK activities.

Your other question I'm—you can remind me of the latter part of the question.

Senator BARRASSO. I'll go onto the next question. Looking at this you're trying to put about 100,000 barrels a day. Is that about what you're looking for? Is that what I've heard?

Ms. FREDRIKSEN. It's about 70,000 barrels per day.

Senator BARRASSO. At that rate, it takes what, almost 2 weeks to put a million barrels away? You're trying to go. So you'd put in 26 million a year.

Then if you think that you're trying to get from 750 to a billion. I mean, that's right there. You're talking about the number of years that it would take.

Then to get to a billion and a half you'd have to do 70,000 a day for 30 years to get you to a billion and a half barrels in the Reserve. I look at that and say, ok, that is clearly a demand on the world system that, as Mr. Verrastro talked about, is already vulnerable because we're kind of peaking out. I just think that it could have a significant impact on what consumers are paying at home and at the pump.

Ms. FREDRIKSEN. Yes, sir. I would like to remind everyone that the reason for the numbers of roughly 55 or 58 days of protection that the SPR provides. Those are the strategic stocks. Strategic is only something that we, the government, have control over.

While we do depend on the privately held, commercial stocks to meet our obligations under the IEA commitment, we none the less do not have any ability to direct what the commercial entities do with their oil. So we're very conscious of that. Therefore find that we need to increase what the government has for strategic use in the case of a severe supply disruption.

Senator BARRASSO. Mr. Chairman, I know my time is up. I just like Dr. Rusco's approach to dollar-cost averaging. It works in investing. They recommend the public do that sort of thing in terms of proper investing and I think that was your point. I think there's some value in at least examining that for these purchases.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Dorgan.

Senator DORGAN. Mr. Chairman, I was chairing the bill on the floor of the Senate, so I was not able to be here early. Let me just make a couple of comments first.

You know, timing, and this is really an issue about timing. Timing is everything. There's an Indian chief who once said, the success of a rain dance depends a lot on timing.

You know, timing is critically important to a lot of things. This is all about timing. The question, Ms. Fredriksen, for me is why would we take $100 a barrel oil and stick it underground at a time when the price of oil is bouncing around in the stratosphere? You almost have to get a loan to fill your tank with gas these days.

Here's what I see happening. Unbelievable speculation in the energy markets and the futures markets, unbelievable speculation. Hedge funds and investment banks neck deep in these processes. In fact I'm told investment banks are buying storage capacity in order to store oil. They are taking oil off the market to store it for future opportunities and sell it at a higher price. This is the first time that's happened.

So you have a carnival of speculation in the futures market. It has dramatically increased the price of oil. Well above that that the fundamentals would suggest be the price of oil today.

Now at this point I believe, because of that, I believe we ought to have a pause with respect to filling the SPR. I understand the points you just made about the oil that's under the government's control, but your own Web site describes the reserves that exceed that amount that we are required to have. I mean, that's on the Web site. So I assume that you're proud of those reserves that meet our international obligations.

But the—we have had testimony before this committee on the issue of the sweet, light crude that you're taking as royalty in kind and putting underground. Mr. Berger, was here, as one of our witnesses. He indicated that because that's a subset of oil and a very valuable type of oil, sweet, light crude, he estimated that what you have done by putting that underground is increased the price of oil by about $10 a barrel.

That's testimony we've received in this committee by at least one expert. We had another expert sit in this committee recently, who said there is not a bit of justification for oil to be with respect to the fundamentals, above about $55 or $60 a barrel.

So there's an unbelievable amount of speculation going on. We got this price up there bouncing, both the price of oil and at the gas pumps. At this point we're going to put 60, 70,000 barrels underground relentlessly just because we decided that's what we're going to do, not withstanding any other issue. I mean, I think that's nuts, frankly.

I just think that we have to worry about timing, about the economic consequences. So I want to ask you, I guess, a couple of questions. No. 1, the cost of the money that we're putting underground in oil, we're taking it out of supply, which by definition increases price, I mean, I used to teach economics. So supply demand means you reduce supply, you increase price, right?

You're saying it's insignificant. Other experts have told us that it is not insignificant at all. I want to ask you, No. 1, what's it going to cost to do what you are suggesting? It looks to me like $80 billion or more. I don't see that money being recommended to fill the SPR the way you want to spill it—fill it rather, relentlessly, without concern to what's happening in the marketplace.

Second, is doing this the most effective way to reduce our dependence and provide energy security for our country or are there other subset of investments that we ought to make in renewable

energy. For example say we're talking about $100 a barrel oil and sticking it underground. Are there other investments you could have made with that equivalent amount of money in other energy technologies or energy investments that would have been much, much more effective?

Now I've bled away most of my time because I wasn't able to be here to start. But I want to ask, Ms. Fredriksen, have you priced out what this is going to cost in terms of reaching the billion and a half barrel goal in terms of the cost of purchasing the oil over a long period and the facilities that would have to be built or expanded? Is there an estimate of the price?

Ms. FREDRIKSEN. We have submitted those plans to Congress for our expansion plans to the 1.5 which Congress has not currently authorized us to go to.

Senator DORGAN. But do you know what the price would be if you're suggesting we do that? Do you know what the cost will be?

Ms. FREDRIKSEN. I'm assuming your asking me based on today's conditions.

Senator DORGAN. What do you expect? I mean I assume that would estimate from your standpoint what the price of oil would be in the future. But what I assume that because you're planning to do this you have some notion of what the cost might be in the future.

Ms. FREDRIKSEN. I, unlike you, sir, am just an engineer. So I won't even claim to be smart about economics. But I will say that from what I understand from the Energy Information Administration this is a backward dated market right now and that means that the prices today are higher than what they expect the future to be.

But none of us can predict the future. So we have taken a true market look at our impact of taking the RIK oil to fill to our capacity of 727. We have not found based on that analysis that there is a significant impact on the market.

Senator DORGAN. I'd like to see that analysis. I understand the analysis exists but has not been made available. We have had other experts testify to say it is having an impact on the market because it's a subset, the sweet, light crude.

I tell you I've introduced this legislation that has bipartisan support. I'm going to try to find every way possible in the coming couple of months to stop the Department from putting oil underground when oil is $100 a barrel. I think that is unbelievable to do.

So, let me ask another question about—I appreciate your being here and representing the Department's views. But could you send me the analysis that there is no impact?

[The information referred to follows:]

DEPARTMENT OF ENERGY,
Washington, DC, January 26, 2007.

MEMORANDUM FOR THE FILE

From: John D. Shages, Deputy Assistant Secretary, Petroleum Reserves

Subject: Resumption Of Strategic Petroleum Reserve Oil Acquisition

BACKGROUND

The Energy Policy Act of 2005 directs the Secretary of Energy, "as expeditiously as practicable, without incurring excessive cost or appreciably increasing the price

of petroleum products to consumers, acquire petroleum in quantities sufficient to fill the Strategic Petroleum Reserve to the 1,000,000,000 barrel capacity authorized under section 154(a) of the Energy Policy and Conservation Act".

The Strategic Petroleum Reserve Office under direction of the President resumed oil acquisition for the Strategic Petroleum Reserve (SPR) in early 2002, with a goal of 700 million barrels. That goal was achieved in August 2005, however, Hurricane Katrina caused us to loan and sell a total of 20.8 million barrels of oil. Most of the loaned oil was returned by the Spring of 2006. In March 2006, as part of a four point program to address high oil prices, the President directed us to stop filling the SPR. In response we deferred 1.7 million barrels of oil deliveries which are now scheduled for the second quarter of 2007. Upon receipt of that oil we will have an inventory of 691 million barrels. Otherwise the Department of Energy is not acquiring oil to fill the SPR.

ISSUE

Is the present time appropriate to resume oil acquisition to satisfy requirements of the Energy Policy Act of 2005 requiring us to fill the SPR to authorized one billion barrel capacity, "as expeditiously as practicable without incurring excessive cost or appreciably affecting the price of petroleum products to consumers"?

DISCUSSION

The Energy Policy Act of 2005 also required the Department to issue procedures for oil acquisition. Those procedures were finalized as regulations and prescribe the issues that must be addressed when the Department intends to resume oil acquisitions after a hiatus. The attached report authored by staff of the Strategic Petroleum Reserve offices, satisfies the regulations. It addresses all the issues of consequence that should be considered prior to a substantial oil acquisition. The report indicates in every area of concern that the present is an acceptable time to begin an acquisition of approximately 37 million barrels of oil.

FINDING

I find that the attached analysis satisfies our codified procedures for oil acquisition. I also agree with the particulars of the analysis and its conclusions. Furthermore, in my judgment the recent actions of the Organization of Petroleum Exporting Countries to reduce exports, and indications that they are ready to further reduce exports if necessary to defend current levels of commercial inventories and prices, makes it unlikely there would be any benefit in delaying the resumption of crude oil acquisition. Therefore, I am directing Director of the Office of Operations and Readiness and the Strategic Petroleum Reserve Project Management Office to take all necessary actions to solicit for and procure oil to the extent practicable and as limited by available funding, and additionally to initiate resumption of the transfer of oil royalty oil from the Department of the Interior. Our intention is reach the target inventory of 727 million barrels by the end of calendar year 2008.

DEPARTMENT OF ENERGY,
Washington, DC, January 18, 2007.

MEMORANDUM FOR JOHN D. SHAGES, DEPUTY ASSISTANT SECRETARY, OFFICE OF PETROLEUM RESERVES

Through: Lynnette Le Mat, Director, Office of Operations and Readiness

From: Nancy Marland, Industrial Specialist and Jeremy Cusimano, Economist

Subject: Assessment of prevailing market conditions prior to the resumption of Strategic Petroleum Reserve fill.

BACKGROUND

The Procedures for the Acquisition of Petroleum for the Strategic Petroleum Reserve (10 CFR Part 626) establishes the rules and procedures for acquiring Strategic Petroleum Reserve (SPR) crude oil. This rule stipulates that prior to the resumption of SPR fill, "DOE will consider various factors that may be affecting market fundamentals, current and projected SPR and commercial receipt capabilities, and the geopolitical climate." The Department of Energy wishes to resume activities to acquire approximately 37 million barrels of crude oil to fill the SPR to its current capacity of 727 million barrels. These activities will include open market purchases and the resumption of the Royalty-in-Kind (RIK) Exchange Program with the De-

partment of the Interior. Therefore, as prescribed by the rule, DOE must make an assessment of the impact of these acquisition activities.

ASSESSMENT

To assess the potential impact on markets of DOE's acquisition of crude oil for the Strategic Petroleum Reserve, the SPR office reviewed current and future prices, a wide variety of industry assessments and expert opinions as contained in studies, trade publications and news reports, and official outlooks published by the Energy Information Administration and international Energy Agency. The factors considered are not limited to those being enumerated below.

(1) The current inventory of the SPR

The current inventory of the SPR is approximately 690 million barrels. The peak inventory of 700.8 million barrels was achieved in August 2005 before the sale of 11 million barrels as a result of Hurricane Katrina. On April 25, 2006 President George W. Bush directed the Department of Energy to defer filling the SPR for a short period of time in response to prevailing market conditions.

The Department seeks to acquire a total of 37 million barrels to fill the Reserve to capacity in the near term. Filling to the current capacity is consistent with the Energy Policy Act of 2005 (P.L. 109-58, §301 (e)) direction to fill as expeditiously as practicable to the authorized one billion barrels capacity. The volume of crude oil that is sought to fill the SPR represents less than one-third of total global daily production. Specifically, $584 million of the proceeds from the 2005 hurricane Katrina drawdown sale will initially be used to purchase from the open market starting in the second quarter of calendar year 2007 at a rate that will average approximately 100,000 barrels per day. Subsequently, transfers under the RIK exchange program will recommence on July 1, 2007 at a rate of approximately 50,000 barrels per day for 90 days, and then increase to a rate of 100,000 barrels per day until the capacity is filled. At these rates it would take more than a year to fill the SPR to the 727 million barrel capacity.

(2) The current level of private inventories

As of January 5, 2007, the Energy Infonnation Administration (EIA) reports total petroleum stocks (excluding the SPR) of 1031.3 million barrels. This level is above the upper end of the 5-year average for this time of year, and in general inventories throughout 2006 were near or above the average range.

Crude oil (excluding the SPR) stocks accounted for 315 million barrels of total private stocks. While declining from peak levels in the autumn of 2006, crude oil stocks are nonetheless also above the upper end of the 5-year average for this time of year.

The crude oil futures market is currently in "contango". This is a market condition where near-term prices are lower than future prices. This market condition typically encourages the building and holding of private stocks and is likely a driving force behind the observed build and maintenance of private stocks over the past year.

While the significant overhang of stocks from autumn highs has been worked off to some degree, the continuance of the contango structure makes it highly unlikely that, at a modest fill rate, the diversion of 37 million barrels of crude oil into strategic storage over the next year will displace private industry stocks and discourage industry stockpiling. Private inventory levels arc more influenced by market forces that would not be significantly impacted by the quantity of oil being added to the SPR.

(3) Days of net import protection

As a member nation of the International Energy Agency, the United States is committed to maintaining stocks of crude and products in reserves equivalent to 90 days of net petroleum imports. Computations of member stockpile requirements are based on both public and privately held stocks.

The SPR crude oil inventory of 690 million barrels is equivalent to approximately 58 days of import protection. Together with all usable private petroleum stocks, the total days of import protection is approximately 138 days. Filling to the 727 million barrels of SPR capacity would add an additional 3 days of import protection at current import levels.

While currently healthy, the days of import protection afforded by the current stock levels will decline as the import rate goes up and especially if the futures market reverts to backwardation over time, discouraging private stockholding. Based on EIA's Annual Energy Outlook import projections, days of net import protection provided by the SPR will decline to 57 days by 2010 and to 53 days by 2015. However, the three extra days in SPR storage would help to reduce reliance on private stocks to meet IEA compliance standards.

(4) Current price levels for crude oil and related commodities

Recent crude oil prices have varied between $51 and $64 per barrel, down from a mid-July 2006 high of $78.40. The price of West Texas Intermediate has fallen 15 percent from January 2. Product prices reflect this overall decrease, and refinery margins have come off sustained highs that characterized the spring and summer. An unexpectedly mild winter, particularly in the Northeast, has not put a strain on supplies, and prices have continued to decline Any short-term price spikes or supply issues should easily be addressed by the petroleum stocks held by industry. Although prices have receded from 2006 highs, most forecasters nonetheless predict crude oil prices to stay at or above current levels for the near future. Although it can not be said with certainty, rising demand from global economic growth, especially in developing countries, producer (OPEC)-managed supply, investment funds moving in and out of commodities to balance their portfolios, and the risk of market volatility driven by geopolitical events would suggest that if the SPR were filled at a later date it could be done at a higher cost.

(5) The outlook for international and domestic production levels

According to the Energy Information Administration (EIA) January 9, 2007 Short-Term Energy Outlook, "Domestic oil production in 2006 is estimated at 5.14 million barrels per day. In 2007 and 2008, crude oil production is projected to average 5.31 and 5.45 million barrels per day, respectively, reflecting not only recovery from the impact of the 2005 hurricanes that continued to depress Gulf of Mexico production in the first half of 2006, but also the startup of new deepwater production."

Citing high global inventories, OPEC announced in October 2006 its intentions to cut production by 1.2 million barrels per day from November 1, reportedly to stabilize the market, to reduce the previously cited stock overhang, and to keep prices in the range necessary to support investments for maintaining or increasing future production capacity. A second cut of 0.5 million barrels per day is scheduled to go into effect on February 1, 2007.

EIA projects non-OPEC production to rise by 1.1 million barrels per day in the near term. Most of this increase in production will come from the Caspian region and increased BTC pipeline throughput. In addition, significant expansion projects in places such as Russia, Africa, Brazil, and Canada's oil sands will offset declines in mature fields such as those in the North Sea and Mexico, and add additional crude oil supply to the global market.

The dedication of 100,000 barrels per day into strategic storage represents approximately 0.12 percent of world crude oil production. Given the positive near-term supply picture the daily removal of that quantity of crude oil from the world market will have a negligible impact crude oil prices.

(6) Existing or potential disruptions in supply

Many petroleum market analysts attribute a significant portion of recent crude oil price increases to changes in either perceived or real global supply risk. The political climate in several major oil producing regions (e.g. Nigeria, Venezuela, and the Middle East) has created concern within the market over short-term and long-term supply. By continuing to rely on these regions for imported crude oil, the United States is highly vulnerable, both strategically and economically, to disruptions in supply. The 2005 Energy Modeling Forum assessment of crude oil market risk identified an increasing likelihood of crude oil supply disruptions within these regions.

As long as the United States relies on imported oil for unstable regions, the Strategic Petroleum Reserve provides the first line of defense from supply disruptions. With the share of U.S. crude oil demand that is supply through imports projected to rise significantly over the coming years, it seems prudent to increase the level of protection supplied by the SPR. Adding this additional 37 million barrels to the SPR will provide additional protection of over three days worth of net imports.

Prior to engaging in SPR fill activities, the Department of Energy should consider the potential for large crude oil supply disruptions that would affect fill activities as well as the potential for SPR fill activities to increase the likelihood of supply disruptions. In recent years there have been a number of relatively small (up to 2 million barrels per day) crude oil supply disruptions and the current production from a number of less stable regions can fluctuate daily; however, the market is not currently considered to be 'disrupted' in any way. There is no readily available evidence that would lead us to expect a crude oil supply disruption in the coming months that would be of sufficient size to interfere with the fill of the SPR. Additionally, given the rates at which the SPR will be filled it is highly unlikely that this fill activity will adversely impact the level of global crude oil production.

(7) Existing refining capability

Refinery utilization rates can act as an indicator of petroleum market tightness. High utilization rates (well in excess of 90%) suggest an elevated demand for petroleum products and therefore crude oil. As discussed herein, during periods of market tightness small changes in supply or demand will have an amplified market impact. With the exception of normal autumn and spring turnarounds to adjust for seasonal product slates, domestic refineries have by and large recovered from the 2005 hurricane impacts and have been running between 87 and 92 percent utilization, lower than in recent years but adequate to supply demand for and maintain stocks of all major products. The January 9, 2007 EIA Short Term Energy Outlook projects distillate inventories to be within the five-year average range and motor gasoline stocks to be slightly higher than at this time last year. Refining margins have retreated from earlier elevated levels, and the current level of refinery utilization reflects that sufficiency of supply. The recent periods of high refinery utilization and handsome refining margins have lead many U.S. and international refiners to plan significant capacity expansions. Virtually all U.S. expansions are designed to increase the refineries capability to process the cheaper heavy sour crudes as feedstock. The numbers of refinery expansions that are planned lead us to believe that refinery utilization rates should remain at a comfortable level in the near term.

When jointly considering this trend in refining capacity and the current 'contango' in the futures market, which should continue to encourage high industry crude oil stocks, there does not appear to be any potential for negative impacts from filling the SPR at the proposed rates. High levels of private crude oil stocks and slack in the refining system should help attenuate the impact of any small market disruptions. The total proposed fill volume and the rate at which fill will occur are such that they should not disrupt this market relationship.

(8) Futures market price differentials for crude oil and related commodities

The contango market structure seems to be firmly entrenched for NYMEX crude oil and products futures prices. This market condition will continue to encourage high levels of industry stockpiling. This is driven by the market's perception of ample supplies available in the near term and the expectation that prices in the future will be higher than they are today. The WTI futures price curve is increasing from the current month price of roughly $52 per barrel to between $58 and $59 per barrel 18-22 months out. This suggests that filling the SPR now, at the pace that is proposed, will likely not have a significant market impact and will proved to be more fiscally responsible than filling at a later date.

(9) Any other factor the consideration of which the Secretary deems to be necessary or appropriate

China has recently begun to fill the 33 million barrel first phase of its strategic reserve, reportedly now two-thirds towards that milestone. The re-entry of the United States into the market may introduce competition with China to pick up the marginal barrels for filling respective reserves.

Recent reports indicate China may fill its reserve to 100 million barrels in the next two years, an average fill rate of 150,000 barrels per day. While statements by China indicated their acquisition may be tied to a target price threshold, the actual pattern of those future acquisitions, in terms of both volume and timing, is unclear, and this uncertainty may result in periodic market forays having a marked impact. In contrast, DOE would follow past practice of acquiring stocks at a low, steady rate under term contracts or continuous open spot closings until an advertised goal is reached. The transparency inherent in this process allows market participants to factor it into their planning. The anticipated 100,000 barrels per day anticipated combined purchase and royalty transfer rate would be expected to be accommodated in the same way, and is a mere fraction of OPEC's discretionary production.

As China has opened up the facilities for Sinopec stocks, despite pubic statements that it will be used only in instances of supply shortage, it is at yet unclear what the use policies will be, i.e., in response to price signals or for supply security. While there is some 'freerider' benefit to the U.S. from other countries developing strategic stockpiles, the uncertainty over how large the Chinese reserve actually will be and their future use policy brings these benefits into question. To ensure the energy security of the United States it is recommended that the SPR be filled with this incremental volume rather than relying on others to develop the reserves.

RECOMMENDATION

Based on the considerations described herein, we recommend the Department of Energy issue a public solicitation to purchase crude oil and then reinstate the Roy-

alty-in-Kind program with the Department of the Interior to acquire a total of approximately 37 million barrels of crude oil at an average rate of 100,000 barrels per day. Given the above considerations, the market impact of transferring these 37 million barrels to the SPR should be negligible.

DEPARTMENT OF ENERGY,
Washington, DC, September 20, 2007.

MEMORANDUM FOR JOHN D. SHAGES, DEPUTY ASSISTANT SECRETARY, OFFICE OF PETROLEUM RESERVES

Through: Lynnette Le Mat, Director, Office of Operations and Readiness

From: Nancy Marland, Industrial Specialist; Jeremy Cusimano, Economist; and Jordon Grimm, Economist

Subject: Assessment of prevailing market conditions prior to the continuation of Strategic Petroleum Reserve fill

BACKGROUND

The Procedures for the Acquisition of Petroleum for the Strategic Petroleum Reserve (10 CFR Part 626) establishes the rules and procedures for acquiring Strategic Petroleum Reserve (SPR) crude oil. This rule stipulates that prior to the resumption of SPR fill, "DOE will consider various factors that may be affecting market fundamentals, current and projected SPR and commercial receipt capabilities, and the geopolitical climate." In April of 2007 the Department of Energy resumed activities to acquire approximately 37 million barrels of crude oil to fill the SPR to its current capacity of 727 million barrels. These activities included resumption of the Royalty-inKind (RIK) Exchange Program with the Department of the Interior and two unsuccessful solicitations for direct market purchases. Presently, the first round of RIK exchanges is nearing completion and the Department of Energy wishes to issue a solicitation for a second round of exchanges. Therefore, as prescribed by the rule, DOE must make an assessment of the impact of these acquisition activities.

ASSESSMENT

To assess the potential impact on markets of DOE's acquisition of crude oil for the Strategic Petroleum Reserve, the SPR office reviewed current and future prices, a wide variety of industry assessments and expert opinions as contained in studies, trade publications and news reports, and official outlooks published by the Energy Information Administration and International Energy Agency. The factors considered are not limited to those being enumerated below

(1) The current inventory of the SPR

The current inventory of the SPR is approximately 692.1 million barrels. The peak inventory of 700.8 million barrels was achieved in August 2005 before the sale of 11 million barrels as a result of Hurricane Katrina. On April 25, 2006 President George W. Bush directed the Department of Energy to defer filling the SPR for a short period of time in response to prevailing market conditions.

The fill of the SPR was resumed through the RIK program with the Department of the Interior. A solicitation for the first round of RIK was issued in April 2007 and the first exchange barrels have begun to arrive at SPR sites. Approximately 8.5 million barrels of exchange oil that will be delivered to the SPR by January 2008 in the first round of RIK. The Department seeks to acquire an additional 28.5 million barrels to complete the fill of the Reserve to its near term capacity. Filling to the current capacity is consistent with the Energy Policy Act of 2005 (P.L. 10958, §301 (e)) direction to fill as expeditiously as practicable to the authorized one billion barrels capacity. The volume of crude oil that is sought to fill the SPR represents less than one-third of total global daily production. The fill rate for the second round of RIK will increase slightly from 50,000 barrels per day to 70,000 barrels per day. The total quantity of oil to be offered for exchanged will be roughly 12.6 million barrels. At these rates it would take more than a year to fill the SPR to the 727 million barrel capacity.

(2) The current level of private inventories

As of September 12, 2007, the Energy Information Administration (EIA) reported total petroleum stocks (excluding the SPR) of 1019.1 million barrels. This level is above the upper half of the 5-year range for this time of year, and in general inventories in 2007 have been in or above the average range.

Crude oil (excluding the SPR) stocks accounted for 322.6 million barrels of total private stocks. While declining from peak levels in the July of 2007, crude oil stocks are nonetheless also above the upper end of the 5-year average for this time of year.

The crude oil futures market is currently backwardated. This is a market condition where near-term prices are higher than future prices. This market condition typically discourages the building and holding of private stocks and is likely a driving force behind the observed decline in private stocks. Although privately held stocks are declining, they are still relatively high when compared to this time of year over the past decade. Additionally, given the very modest SPR fill rate from RIK exchanges it is highly unlikely that the diversion of an additional 12.6 million barrels of crude oil will negatively impact industry stock levels. Private inventory levels are more influenced by market forces that would not be significantly impacted by the quantity of oil being added to the SPR.

(3) Days of net import protection

As a member nation of the International Energy Agency, the United States is committed to maintaining stocks of crude and products in reserves equivalent to 90 days of net petroleum imports. Computations of member stockpile requirements are based on both public and privately held stocks.

The SPR crude oil inventory of 692.1 million barrels is equivalent to approximately 58 days of import protection. Together with all usable private petroleum stocks, the total days of import protection is approximately 139 days. Filling to the 727 million barrels of SPR capacity would add an additional 3 days of import protection at current import levels.

While currently healthy, the days of import protection afforded by the current stock levels will decline as the import rate goes up and especially if the futures market remains backwardated over time, discouraging private stockholding. Based on ETA's Annual Energy Outlook import projections, days of net import protection provided by the SPR will decline to 57 days by 2010 and to 53 days by 2015. However, the three extra days in SPR storage would help to reduce reliance on private stocks to meet IEA compliance standards.

(4) Current price levels for crude oil and related commodities

Recent crude oil prices have varied between $63 and $80 per barrel. Compared to prices from one year before, crude oil in late August 2007 was valued nearly 8% higher. Product prices were higher in June than in the previous year, but cooled for the remainder of the summer as refinery utilization improved. Refiner margins decreased through the summer due to a tightening global crude oil market. Enough slack remains in the oil market that any short-term price spikes or supply issues should be addressed by the petroleum stocks held by industry. While the end of summer generally signals a decrease in crude oil prices, worries over an active hurricane season in the Atlantic helped increase fuel prices to record levels. Barring a hurricane-related disaster for producers, though, these fears should ease after the peak of hurricane season in mid-September. Although it can not be said with certainty, rising demand from global economic growth, especially in developing countries, producer (OPEC)-managed supply, investment funds moving in and out of commodities to balance their portfolios, and the risk of market volatility driven by geopolitical events would suggest that if the SPR were filled at a later date it could be done at a higher cost.

(5) The outlook for international and domestic production levels

According to the Energy Information Administration (EIA) September 11, 2007 Short-Term Energy Outlook, domestic oil production in 2007 is estimated at 5.2 million barrels per day. In 2008, domestic crude oil production is projected to average 5.36 million barrels per day. Fueling these increases is new production from deepwater platforms.

On September 11, 2007, OPEC agreed to increase production by 500,000 barrels per day. EIA projects non-OPEC production to rise by 1 million barrels per day for 2008, an increase over the expected 600,000 barrel per day growth projected for 2007. Most of this increase will come from the United States, Brazil and the former Soviet Union. These increases will offset declines in mature fields such as those in Mexico, and add additional crude oil supply to the global market.

The dedication of 70,000 barrels per day into strategic storage represents approximately 0.09 percent of world crude oil production. Given the positive near-term supply picture the daily removal of that quantity of crude oil from the world market will have a negligible impact crude oil prices.

(6) Existing or potential disruptions in supply

Many petroleum market analysts attribute a significant portion of recent crude oil price increases to changes in either perceived or real global supply risk. The political climate in several major oil producing regions (e.g. Nigeria, Venezuela, and the Middle East) has created concern within the market over short-term and long-term supply. By continuing to rely on these regions for imported crude oil, the United States is highly vulnerable, both strategically and economically, to disruptions in supply. The 2005 Energy Modeling Forum assessment of crude oil market risk identified an increasing likelihood of crude oil supply disruptions within these regions.

As long as the United States relies on imported oil from unstable regions, the Strategic Petroleum Reserve provides the first line of defense from supply disruptions. With the share of U.S. crude oil demand that is supplied through imports projected to rise significantly over the coming years, it is prudent to increase the level of protection supplied by the SPR. Filling the SPR to its capacity will provide additional protection of over three days worth of net imports.

Prior to engaging in SPR fill activities, the Department of Energy should consider the potential for large crude oil supply disruptions that would affect fill activities as well as the potential for SPR fill activities to increase the likelihood of supply curtailments. In recent years there have been a number of relatively small (up to 2 million barrels per day) crude oil supply disruptions and the current production from a number of less stable regions can fluctuate daily; however, the market is not currently considered to be 'disrupted' in any way. There is no readily available evidence that would lead us to expect a crude oil supply disruption in the coming months that would be of sufficient size to interfere with the fill of the SPR. Additionally, given the rates at which the SPR will be filled it is highly unlikely that this fill activity will adversely impact the level of global crude oil production.

(7) Existing refining capability

Refinery utilization rates can act as an indicator of petroleum market tightness. High utilization rates (well in excess of 90%) suggest an elevated demand for petroleum products and therefore crude oil. As discussed herein, during periods of market tightness small changes in supply or demand will have an amplified market impact. With the exception of normal autumn and spring turnarounds to adjust for seasonal product slates, and some planned downtime in the spring of 2006, domestic refineries have by and large recovered from the 2005 hurricane impacts and have been running between 87 and 92 percent utilization, lower than in recent years but adequate to supply demand for and maintain stocks of all major products. The September 11, 2007 EIA Short Term Energy Outlook projects distillate inventories to be within the five-year average range and motor gasoline stocks to be slightly lower than at the five-year average. Refining margins have retreated from earlier elevated levels, and the current level of refinery utilization reflects that sufficiency of supply. The recent periods of high refinery utilization and handsome refining margins have lead many U.S. and international refiners to plan significant capacity expansions. Virtually all U.S. expansions are designed to increase the refineries capability to process the cheaper heavy sour crudes as feedstock. The numbers of refinery expansions that are planned lead us to believe that refinery utilization rates should remain at a comfortable level in the near term.

The current backwardation condition in crude oil futures markets leads refiners to reduce their crude oil stocks. Despite this, stocks are relatively high and refiners maintain some slack in utilization. Because of these facts, filling the SPR at the proposed rate should not cause any disturbance in oil markets.

(8) Futures market price differentials for crude oil and related commodities

The contango market structure that seemed entrenched in early 2007 had flipped to a backwardation structure by the end of summer. This represents a market perception that oil prices in the future will be lower than they are today. Backwardation provides a disincentive for holding crude oil stocks. At the beginning of September, the WTI futures price curve was decreasing from the current month price of $75 per barrel to $68—$70 per barrel 18-22 months out. However, the NYMEX WTI contract has previously remained backwardated while prices consistently climbed for several consecutive years. This highlights the fact that the WTI forward curve is not in anyway a forecast of market prices. While prices may be relatively high at the moment, we have no reason to believe that they will be going down anytime soon. Additionally, while industry reduces the amount of crude oil held in their operational reserves, our domestic industry becomes more vulnerable to shocks. This is because they have a reduced ability to absorb 'bumps in the road' when holding smaller operational stocks. Extended periods of market backwardation

highlight the inherently governmental nature of strategic stock building. Thus, continuing fill of the SPR now will increase the total amount of stocks held in the U.S. during a period where they would not otherwise be stored by industry.

(9) Any other factor the consideration of which the Secretary deems to be necessary or appropriate

China has recently completed fill of the 33 million barrel first phase of its strategic reserve. The presence of the United States into the market may introduce competition with China to pick up the marginal barrels for filling respective reserves.

Recent reports indicate China may fill its reserve at 150,000 barrels per day through the end of 2007. The actual pattern of those future acquisitions, in terms of both volume and timing, is unclear, and this uncertainty may result in periodic market forays having a marked impact. In contrast, DOE would follow past practice of acquiring stocks at a low, steady rate under term contracts or continuous open spot closings until the advertised goal is reached. The transparency inherent in this process allows market participants to factor it into their planning. The anticipated 70,000 barrels per day anticipated combined purchase and royalty transfer rate would be expected to be accommodated in the same way, and is a mere fraction of OPEC's discretionary production.

As China has opened up the facilities for Sinopec and other international entities' stocks, despite pubic statements that it will be used only in instances of supply shortage, it is at yet unclear what the use policies will be, i.e., in response to price signals or for supply security. While there is some 'freerider' benefit to the U.S. from other countries developing strategic stockpiles, the uncertainty over the development of the Chinese reserve actually will be and their future use policy brings these benefits into question. To ensure the energy security of the United States it is recommended that the SPR be filled with this incremental volume rather than relying on others to develop the reserves.

RECOMMENDATION

Based on the considerations described herein, we recommend the Department of Energy issue a public solicitation for the second round of RIK exchanges to acquire an additional 12 million barrels of crude oil in support of the goal of filling the SPR to its capacity of 727 million barrels. The fill rate during this next round of exchanges will be roughly 70,000 barrels per day. As highlighted in the above discussion, market conditions are less than ideal for crude oil acquisition; however, the method of acquisition and the quantity of oil being diverted to the SPR provide the necessary assurances that these activities will not exacerbate current market conditions. It is determined that, the market impact of transferring these 12 million barrels to the SPR should be negligible and the potential benefits derived from incrementally increasing the size of the SPR outweigh and exposure to market price risk.

Handwritten notation follows:

The recommendation to proceed with acquisition of approximately 12 million barrels of crude oil at a rate of 70,000 barrels per day beginning January 1, 2008, is approved.

JOHN D. SHAGES,
Deputy Assistant Secretary,
Petroleum Reserves,
September 22, 2007.

DEPARTMENT OF ENERGY,
Washington, DC, October 15, 2007.

MEMORANDUM FOR THE FILE

From: David F. Johnson, Director, Planning and Engineering Office, Petroleum Reserves

Subject: Continuation of Strategic Petroleum Reserve (SPR) Fill Through Royalty-In-Kind (RIK) Exchange

BACKGROUND

The Energy Policy Act of 2005 (EPAct 2005) directs the Secretary of Energy, "as expeditiously as practicable, without incurring excessive cost or appeiably increasing the price of petroleum products to consumers, acquire petroleum in quantities suffi-

cient to fill the Strategic Petroleum Reserve to the 1,000,000,000 barrel capacity authorized under section 154(a) of the Energy Policy and Conservation Act."

EPAct 2005 also required the Department to issue procedures for oil acquisition. Those procedures were finalized as regulations and prescribe the issues that must be acillressed either before the Department enters the market or every six months for continual of ongoing acquisition activity.

In January 2007, after a post-hurricane Katrina hiatus, the SPR conducted the analysis required by the acquisition procedures and initiated activities to resume fill to the current 727 million barrel capacity. While direct purchase solicitations in spring 2007 were unsuccessful due to unacceptably high offers, the RIK exchange program with the Department of the Interior was successfully resumed in July 2007. Transfer of royalty oil under the current six-month contract ends December 31, 2007.

ISSUE

Is it appropriate to continue the RIK exchange program for another six-month contract cycle?

DISCUSSION

The attached report authored by the staff of the Strategic Petroleum Reserve addresses the areas required by the regulations to be considered for the continuance of acquisition activities. The report indicates it is appropriate to issue a public solicitation for the second round of RIK exchanges to acquire an additional 12 million barrels of crude oil (70,000 barrels per day over a six-month period) in support of the goal of filling the SPR to its capacity of 727 million barrels.

FINDING

I find that the attached analysis satisfies the codified procedures for acquisition. I also agree with the substance of the analysis and its conclusions. Further, despite ongoing uncertainty in demand, supply and economic growth, the markets have accommodated current prices levels, and the marginal impact of the quantity diverted to the SPR should be negligible. As market backwardation has continued, inhibiting the build of commercial stocks, there is no benefit in ceasing acquisitions to build the strategic reserve at this time. Accordingly, I am directing the SPR staff to take the necessary actions to initiate the next round of RIK exchange contracting activities.

Ms. FREDRIKSEN. Yes, sir. I think much of that has been transferred up for Senator Levin, but we'll be happy to share with you.

Senator DORGAN. Just a quick question. Are there better investments we can make than the investment of $100 a barrel oil underground for 70,000 barrels a day in order to reduce our dependence and increase our energy security?

Ms. KENDERDINE. I believe, obviously the Members of Congress and the Administration have a lot of issues, energy issues that they have to balance and weigh the relative value. I personally believe that at this point in our—the energy situation in the world that we need to be investing heavily in technologies to reduce dependence on oil, sequester carbon so that we can use the coal that's in many of your states. Dramatically increase our investments in energy efficiency, the energy efficiency programs and at DOE have been fairly decimated over the last several years and that's our, the biggest bang for our buck is to invest in efficiency right now.

I think that we are at a critical juncture in our history. The geopolitics of energy are not good right now for us or for anyone. I think there are wiser investments then pulling $100 oil off the market and gaining a very incremental amount of oil into the SPR right now.

Senator DORGAN. Mr. Chairman, I've exceeded my time. Maybe if you have another round, I will ask.

The CHAIRMAN. Alright.

Senator Craig.

Senator CRAIG. Let me pick up where Senator Dorgan just left off. So, if Senator Dorgan is chairman of the Energy Appropriations Subcommittee, so Ms. Fredriksen, he's in charge of your budget. So if he cuts you off and keeps the money inside his committee and it goes to some of those technology programs and he gives me $10 million to begin to survey oil reserves in the outer continental, some of you happen to agree with that apparently.

All politics aside if America knew where all of its oil was and how much there was, would that be as valuable as having a SPR? We'll start with Ms. Kenderdine.

Ms. KENDERDINE. I actually have worked for many years to get, not a survey of the OCS, but a R and D program in both unconventional on shore oil and gas as well as ultra deep water off shore. There are enormous resources in both those provinces and DOE's forecasts say that on shore, natural gas, for example, unconventional is going to play an enormous role in meeting our natural gas demand.

So, I have not specifically looked at the value of surveying the OCS, but I do believe that there's significant resource in those provinces that need to be exploited.

Senator CRAIG. Mr. Verrastro.

Mr. VERRASTRO. Senator, I just echo the sentiments, exactly. The last thing I did in the private sector, we worked on the Treasure Island block which is a reserve, maybe the size of Alaska. It's subsalt. It's shallow water, but the target depth is still 30,000 feet. So these are $200 million wells.

Senator CRAIG. Yes.

Mr. VERRASTRO. You can't afford to have too many that miss. So, but I think the resource potential is huge. That we ought to do more and an inventory is a great idea.

Senator CRAIG. Our success in deep water in the Gulf is beginning to prove itself substantially beyond where we thought we could drill.

Mr. VERRASTRO. Where we thought we were, absolutely.

Senator CRAIG. So if we were to do that. But more importantly, let me ask this question. Have any of you looked at the figures if we just pulled the 70,000 barrels a day and left it in the market?

Would it change the value of the price of crude in the market today? Have any of you looked at that? Yes? I'm kind of generically asking the question, anyone who wants to respond.

Ms. KENDERDINE. I mean, it's very, very difficult to measure the impact of 70,000 barrels a day as Mr. Verrastro brought up. The refinery goes down. We lose 70,000 barrels of refined product the price goes over 100.

Senator CRAIG. Yes.

Ms. KENDERDINE. There are enormous prorogations in the market all the time. What I—I would go back to the—a couple points. The price of oil is set at the margin and so the impacts of the time exchange that we did in 2000. We announced the exchange. The oil hadn't moved into the marketplace and the price of oil dropped $7 a barrel.

Senator CRAIG. Yes.

Ms. KENDERDINE. Ok. So that illustrates a couple of points. One, the price of oil set in the margin. Two, when the U.S. indicates that it's willing to act or not act, as Frank pointed out, the world pays attention.

Ok. We have enormous—because our demand is so huge, we have just the President saying he might do something has enormous impact on the market. Then the market psychology is and the speculation in the marketplace is, as Senator Dorgan pointed out, I think that it is very significant going on right now. It is a major issue that needs further examination.

The market fundamentals do not suggest that we should have $100 oil. There are other things going on in this marketplace. When there's a lot of speculation in the market, making small changes, or announcing that the government is willing to act, has a big impact because that speculative bubble is fairly easy to burst.

I will tell you just one circumstance. In 2000 as we were trying to figure out how to get enough heating oil to the Northeast and New England that year. OPEC announced, or actually did, increase production by almost three million barrels a day that year.

The last announcement right before we did the exchange, they announced they were going to increase production by $800,000—800,000 barrels a day and the price of oil went up. Ok. That was the market's judgment that they didn't have the capacity to do that. It turns out when we actually did the exchange the price of oil dropped dramatically. It did go back up at the bombing of the coal, ok. But that was a momentary blip.

Senator CRAIG. Sure.

Ms. KENDERDINE. By the end of the year, prices had gone dramatically down. So there are lots of other anecdotes I could give you. It's a difficult thing to pinpoint. Those are factors that affect the price of oil and in small amounts.

Senator CRAIG. Were you preparing to make——

Mr. VERRASTRO. Senator, may I?

Senator CRAIG. Yes, please.

Mr. VERRASTRO. Yes, I would just add that, I guess, three points. I don't think any of us are disagreeing with the notion that the SPR is a cornerstone of our energy policy.

Senator CRAIG. It's a matter of security. It's an issue of security in relation to shocks. We understand that.

Mr. VERRASTRO. Yes, so there's no question. It's the timing and the volume and I think the drawdown rate is another thing that you have to pay attention to when we talk about days forward cover if you can only drawdown 4.4 million barrels a day, that's hours of daily consumption.

Senator CRAIG. Yes.

Mr. VERRASTRO. So you can't displace whatever the total disruption is if you lose all your imports. So that's one factor. The second factor is I think it's directional consistency at a time when the President of the United States or the Secretary of Energy goes to the Middle East and says, we think the market is tight. It would be good if OPEC would put additional oil on the market. The response from other producers is why are you taking oil off the market, whether it's a big volume or a small volume.

Just to add to that the plans for the spring are for 125,000 barrels a day, some from royalty in kind and some from direct purchase. But that actually is more light, sweet crude which at a time of gasoline supply absolutely makes no sense. So I understand the direction of building the Reserve but you just have to be smart about the way you do it.

Senator CRAIG. Ok. My time is up.

The CHAIRMAN. Senator Corker.

Senator CORKER.I think that last statement is actually a great summary. It seems to me that this is a great hearing that everybody on the panel agrees with the significance of having reserves. Basically we're talking about some management issues as to how to do it.

You know it's really interesting to me. This is a really great populist issue, talking about the fact that we're taking oil off the market and driving up prices at the pump. But some of the very same people that are making an issue out of that wouldn't consider opening up ANWR or other reserves.

That actually—matter of fact, we talk about 70,000 barrels a day. What would ANWR produce at full capacity a day? Does anybody—I know the number is much larger than that.

Mr. VERRASTRO. At its peak, Senator, people talk about 800,000 to a million barrels a day. It would supply about 20 percent of U.S. domestic supply for 20 years or more. It's considerable.

Senator CORKER. Yes. So if this, I think, 12 to 14 times a day coming out of ANWR. So if people truly are concerned about the price of gasoline at the pump, this is not the issue for them to be pursuing. It would really be maybe an issue, but an even bigger issue would be to open up our capacity in our own country in an environmentally safe way to other reserves. Is that correct?

Ms. KENDERDINE. If I could say something, Senator. The—it, ANWR, could produce up to a million barrels a day. There's a range of barrels, the estimates.

But the, from my perspective, and I was an oil and gas and coal person in the Clinton Administration. The—and so I spent a lot of time looking at ANWR, looking at the Naval Petroleum Reserve in Alaska, NPRA, etc. etc. met with an environmentalist not long——

Senator CORKER. Please hurry. I have other questions.

Ms. KENDERDINE. Yes. Major, major environmental organization discussed ANWR. Her response to me is if we needed that oil we wouldn't oppose it, but how do you expect me to go to my members and say open ANWR when our cars are getting 20 miles to the gallon. I think that's a very fair point. It goes back to the other things that you can do.

Senator CORKER. We've done a lot of those. I think that's been pointed out. I think most of us on this committee supported the more aggressive standard on CAFÉ. But I do think it's ironic that we're having this hearing, this populist hearing and yet doing nothing whatsoever, really, to increase production.

I would like to say that right behind this, cap and trade legislation is going to be discussed. We're actually looking at that and open to it. But that's also going to drive up, ultimately, the price of gasoline at the pump.

So I would just like to express that in the sphere of discussion, this is very minute. I assume, are we using futures in our buying process today? I mean we talked a little bit about the price of oil a year from now. We're utilizing the futures market to buy our oil today. Is that correct for the Reserves?

Ms. FREDRIKSEN. It's a factor we look at during a market assessment process that we conduct, the market analysis process. We look at the future.

Senator CORKER. If we began buying today on the futures market, and we know that it is lesser than today, would that not automatically, potentially automatically accrue some savings to us in the future?

Ms. FREDRIKSEN. Potentially, sir. The current value of the barrels in our Strategic Reserve right now are roughly around $27 a barrel. So you can see that that long-term strategy has reduced the average dollar per barrel. So it's a very big national asset that we have.

Senator CORKER. So in essence a lot of people when investing they continue to buy over time whether it's the stock market and whatever the price is they just continue to buy. So what you're saying by virtue of the fact that we continue to buy oil over time is that what we have in the ground is actually worth three times what we paid for it?

I'd just like to say in general that I usually ask questions and don't make statements, but I really think this issue, personally, is being more driven by populism. I think everybody on this panel sees the need to have Strategic Reserves. I would actually say at this point in time in the world, we really need them more than ever with the driving demand and the lack of supply.

I do think there are some management issues that have been brought out today that are intelligent. I hope the Department will look at that. But I hope that we as a body will not do anything to try to keep our country from having Strategic Reserves, but would hope instead that the Department itself will make necessary steps to manage this in the best way for our taxpayers. I thank all of you for your testimony.

The CHAIRMAN. Senator Dorgan is next. Let me just ask one question by way of clarification. Ms. Fredriksen, my understanding is, we the Federal Government, are not buying in the futures market. We are buying in the spot market; and even though the price of oil in the futures market is lower than the price of oil today in the spot market, we are buying a predetermined amount in the spot market at the higher price. Am I right?

Ms. FREDRIKSEN. Correct, sir. I meant that we do take into consideration the future of production, both current and future estimations on production, etc. all of those things that factor into it. So we do look at it in a future way, but we do not buy on the futures market.

The CHAIRMAN. Right. So we don't do what Southwest Airlines does, and go in and buy in the futures market and in that way keep the price of tickets down.

Ms. FREDRIKSEN. Correct, sir. We have a fill policy that's in accordance with EPACT '05 that outlines very clearly what those parameters would be and we follow those.

The CHAIRMAN. Does EPACT '05, in your view, prohibit us buying us in the futures market?

Ms. FREDRIKSEN. I actually don't know the answer to that, sir, exactly. But I'd be happy to respond to you at another time in writing.

[The information referred to follows:]

Section 160 of the Energy Policy and Conservation ACT (EPCA), as amended by the Energy Policy Act of 2005, allows the Secretary to acquire petroleum products "by purchase, exchange, or otherwise" for the SPR (Section 160(a)). Although the current language seems to give the Secretary wide discretion in how oil is acquired by the SPR, the Department in earlier direct acquisitions was unable to explore the possibility of purchasing oil or contract options from the New York Mercantile Exchange (NYMEX) because Federal agencies, under Executive Order 12778 (1991), were prohibited from entering into binding arbitration. NYMEX rules require that all entities conducting transactions through the NYMEX submit to binding arbitration to settle disputes.

The Alternative Dispute Resolution Act of 1996 authorizes a Federal agency to enter into binding arbitration if the agency, in consultation with the Attorney General, has issued guidance on the appropriate use of binding arbitration, and the circumstances under which the agency may use the authority. DOE has not issued such guidance to date. The Department may seek legislation to give the Secretary clear authority to enter into binding arbitration for the purpose of acquiring oil for the SPR on the NYMEX.

The CHAIRMAN. Senator Dorgan.

Senator DORGAN. Mr. Chairman, Senator Corker used the word populist about seven times and I'm—I don't know the exact definition. Somebody once said it means putting the jam on the lower shelf so everybody can reach it. This is not a populist hearing. This is a hearing about a significant economic policy.

But I do want to respond to something Senator Corker said. He asked the question about well, what about those people that come with this populist idea on SPR about increasing production? Before you were on the committee, Senator Corker, Senator Bingaman, myself, Senator Domenici and one other Senator began to push to produce and lease 181 in the Gulf of Mexico.

The reason that we did that is the following. The greatest potential additional production off shore is ranked in the following way: first, in the Gulf of Mexico, second, off the West Coast and third, finally, in Alaska. What we did is we put together a piece of legislation that says let's open up lease 181.

That's the greatest potential of additional production. Bipartisan, four of us fought very hard to get that done. We got it done. It's not as much as I would like.

I want more, but we got it done. So I just want to make the point that this notion that those of us who also want some fairness and some effectiveness in public policy on these issues are not always opposing production. In fact, some of us have been out pushing for additional production and doing so successfully.

Let me make a point about this issue of SPR. The question is if you're taking $100 a barrel oil and sticking it underground when prices are at their maximum is it having an impact, upwards in fact, on price? The answer is clearly, yes. Now one might disagree. Mr. Berger sits in front of us and says because it's sweet, light crude, he thinks it's increased the price of oil by $10 a barrel.

I mean, Senator Corker you may disagree with that. I find it pretty persuasive. When I look at what hedge funds and investment bankers are doing with this carnival of speculation in the fu-

tures market, I'm damn concerned about that. I think there's something fundamentally broken here. We ought to fix it. That's not populist. That's demanding on behalf of economic security for this country that we get this done right.

There are reasons perhaps to oppose my piece of legislation that would say let's stop filling SPR at this moment. What I would suggest is we stop filling SPR right now, take a pause. I assume that would have upward pressure, excuse me. That would have upward pressure on inventory and downward pressure on prices. I think people would immediately then respond to that in a positive way in the marketplace.

To me it just makes no sense at a time when we have all this speculation going on to take supply down, stick it underground and say, you know, we're going to do this no matter what. It doesn't matter. We're just going to do it no matter what. Timing is irrelevant. We're just going to do it.

The question is if you had converted that to the money, to the cash and had an opportunity to invest in other things. Let me give you an example. Ultra deep and unconventional research, you do that, Ms. Fredriksen, in your area, right? Is that productive? I would think it's enormously productive, ultra deep and unconventional drilling because we're trying to figure out what's down there and how do you get to it.

Guess what, the President zeros that out. Guess what, I stuck it back in the appropriations process because I believe it ought to be a priority. Now I'm not involved in it. I'm just saying I think that short changes the future in terms of what we ought to be investing in.

So I just want to say it's not about populism. This is about hard nosed economic issues with respect to whether we ought to put $100 a barrel oil underground and what it does to price. I just hope, I hope we can find a way to pass this legislation. I'm certainly willing to modify the legislation. I don't think what I write is in stone. Some have suggested I think maybe the price point on my legislation should be adjusted. I'm willing to do that.

But I do think we ought to take a pause. That pause ought to give us the opportunity to use what otherwise would come in as revenue from royalty in kind and invest in things that we're not investing in at the moment. We're not investing enough money in energy efficiency, in the biofuels and renewables and unconventional oil programs. A whole range of things that I think will also contribute to this country's energy security.

So, I want to make that point. I'm a big admirer of Senator Corker. You couldn't tell that from my statement and response to what—how he described this hearing. But I do hope we can work together, Senator Corker and try to find a way through this because I think this is an important issue.

Senator CORKER. Mr. Chairman, since my——

The CHAIRMAN. Senator Corker.

Senator CORKER [continuing]. In Presidential debates I noticed when someone's name was evoked they get to respond. First of all I have enjoyed working with you too on numbers of issues. This one has felt a little odd. But just because we're talking with each other and basically leaving our panelists out.

[Laughter.]

Senator CORKER. Your legislation would stop the purchase of this until what time? The money instead would be used for what?

Senator DORGAN. My legislation is a 1-year pause. So it, you know, I don't suggest we pause beyond that. I might at some point if the timing existed beyond that and oil were $150 a barrel and I thought that was a result of speculation I might want to come back in. But so it would be a 1-year pause. It has a $50 price point in it.

Senator CORKER. I would just respond by saying I don't think any of us know what the price of oil is going to be in the future. It just seems to me like we are in semi-perilous times. Even though—but I look forward to talking with you more about it in the future.

I hope my comments were not—we are doing other things that cause the price of oil to be more than it is today. Some of our other policies affect it far more than SPR. But I certainly look forward to talking to you. It sounds like to me you've been a—I see a halo developing actually around your head as it relates to, you know, additional supplies. Apparently you've tried to pursue both courses of action. I thank you for that.

Senator DORGAN. Mr. Chairman, thanks for being patient here. There's a bar that had a bumper sticker once, a bar named Oats Willie's. It had a bumper sticker that says onward through the fog. The one thing that united all of us is none of us know what's going to happen with respect to the price of oil. But we all have a sense of what we ought to be doing in order to deal with prices now and our economic and energy security issues.

The CHAIRMAN. We've had a good discussion and a lot of good testimony. Thank you all for being here. That will conclude the hearing.

[Whereupon, at 12:22 p.m. the hearing was adjourned.]

APPENDIX

RESPONSES TO ADDITIONAL QUESTIONS

RESPONSES OF FRANK RUSCO TO QUESTIONS FROM SENATOR DOMENICI

Question 1a. In your testimony you state that in order to improve the efficiency and reduce fill costs of the SPR, DOE should acquire 10% heavier crude oil for the SPR. It is my understanding that the type of oil in the SPR reflects the U.S. refining capacity in the event of an emergency drawdown. Is there assurance that during an emergency drawdown there will be sufficient refining capacity to handle larger volumes of heavier crude oil?

Answer. The type of crude oil that refineries can process into specific refined products is determined by the type of equipment that the refinery has installed. Crude distillation—the simplest and most basic type of refining process—can be accomplished on a variety of crude oils. However, refineries in recent years have moved to significantly enhance their capabilities for refining heavier crude oils by installing other equipment such as coking units; indeed, a GAO analysis found that 40% of the crude oils that refineries typically process is heavier than what is contained in the SPR, and DOE has noted that "virtually all U.S. (refinery) expansions are designed to increase the refineries capability to process the cheaper heavy sour crudes as feedstocks." Since U.S. refineries have the capability to process the heavier, and cheaper, crude oils, it is appropriate that the expanded SPR contain at least 10 percent heavy crude oils, and that DOE conduct a new crude oil compatibility study to determine the maximum amount of heavier crude oils that the expanded reserve should contain.

Question 1b. Can we run our refineries on heavier, more sour grades of oil without having negative health impacts?

Answer. Yes. Refineries are required to comply with various environmental health standards. The EPA enforces regulations that implement environmental laws including the Clean Air Act, the Clean Water Act, and the Oil Pollution Act, which aim to control the discharge of pollutants into the environment by refiners and other industries. Refiners would be expected to consider the trade-off in increased equipment/environmental mitigation costs when they decide whether to install the equipment to refine heavier crude oils. Thus, refiners' decisions to install the expensive processing equipment to refine heavier crude oils indicates that refiners believe the savings to the refinery by running a heavier, cheaper crude slate—which incidentally is the type of crude oil that the world will increasingly produce in the future—justifies the cost of the complex processing equipment. Moreover, since any heavy crude oil in the reserve would only be used in an emergency and since approximately 40% of the crude oils that refineries typically process is heavier than what is contained in the SPR, filling the SPR with heavier crude oils, such as refiners typically run, would not require the installation of additional refining equipment and would not have any associated negative health impacts. Moreover, the SPR would be more effective because it could release a slate of crude oils closer to what U.S. refineries can use most efficiently.

Question 2a. In your testimony you mention the "dollar-cost-averaging purchasing strategy"—please explain this method of acquiring crude oil for the SPR?

Answer. Under a dollar-cost averaging purchasing strategy, DOE would acquire a steady value of oil per time period, e.g. month. During periods of high prices, the government would buy less crude oil. However, during periods of low prices, the government would buy more crude oil. For example, in a simplified example, if the government committed to buying $10 million of crude oil per month it would purchase 100,000 barrels of crude oil when prices were $100/barrel; but purchase 200,000 barrels when prices were $50/barrel. This approach would likely reduce fill costs over a range of plausible paths of future crude oil prices, and the likely savings would be greater if price volatility is greater. In addition, it may provide benefits to the market by taking fewer barrels of crude oil off the market when prices are high.

Question 2b. Isn't the point of "dollar-cost-averaging" that greatest economic security comes through regular investment, and that timing the markets is unwise?

Answer. Not necessarily. Our work has shown the government can save money filling the SPR using dollar cost averaging, relative to purchasing a steady volume of oil over time. However, dollar cost averaging and broad determinations about when it is appropriate to fill the reserve are not mutually exclusive. For example, DOE could first make an overall assessment about whether it was an appropriate time to buy oil, and, if it was, use dollar cost averaging to reduce fill costs. However, the extent to which DOE should time the market depends on how well it can estimate future price movements and we have not evaluated this.

Question 3. Which has a greater impact on the markets: the SPR fill, or the myriad of disruptions we've experienced over the past several years? Is the 70,000 barrel per day fill significant when compared to the disruptions in Nigeria, Venezuela, and the Gulf of Mexico?

Answer. A large supply disruption can have a dramatic impact on crude oil prices. It is also reasonable to say that the potential impact of any event depends on the overall conditions in the market at the time of the event. For example, taking 70,000 barrels of crude oil off the market when potential supplies exceed market demand would likely have a negligible impact on prices. However, taking the same amount of crude oil off the market when oil supplies are tighter might have a greater impact on price. Overall, GAO has not analyzed the effects of SPR fill decisions on prices over time, although we are aware that there are differences of opinion as to such effects.

RESPONSES OF FRANK RUSCO TO QUESTIONS FROM SENATOR DORGAN

Question 1. Has there been extensive analysis done on the long-term costs of filling the SPR to 1 billion barrels as authorized in EPACT 2005? How about analysis on the Administration goal of filling the SPR to 1.5 billion barrels?

Answer. In June 2007 DOE published a study entitled "Strategic Petroleum Reserve Plan: Expansion To 1 Billion Barrels," which named three sites for the expanded fill, and estimated costs for the expansion to 1 billion barrels at approximately $3.67 billion. The cost of operating and maintaining expansion facilities following construction was estimated at $35 to $40 million per year. The projected cost of crude oil to fill the SPR from 700 million barrels to 1 billion barrels was $18.125 billion based on forecasted crude oil prices of $56.20 to $65.10 per barrel. GAO has not evaluated this study so we cannot speak to its completeness or accuracy.

In its August 2006 written comments to our report on the subject of expanding the SPR, DOE agreed that it should study how to reduce costs when filling the SPR, and noted SPR crude oil acquisition must be in accordance with rules and procedures set forth in Energy Policy Act of 2005 (EPACT05). DOE earlier this month told us they believe they have adequately studied how to reduce costs of the future fill, through DOE's November 8, 2006 publication of the rulemaking "Procedures for Acquisition of Petroleum for the Strategic Petroleum Reserve." DOE noted these new crude oil acquisition procedures include "provisions to consider a wide array of factors when acquiring crude oil, including fill rate, present and future oil prices, and expert opinions. The Department will review these factors prior to commencing crude oil acquisition and will review the appropriate rate of crude oil acquisition each time an open market solicitation has been suspended for more than three months, and six months in the case of ongoing or suspended royalty-in-kind transfers. Additionally, [DOE] will provide for deferrals of contractually scheduled deliveries in the event that the market is distorted by a disruption to supply or other factors." However, we note that the publication of this new rule, a mere 3 months after our August 2006 report, does not reference any new DOE study, nor does it appear to include any extensive analysis to support these new rulemaking procedures—in fact, the Federal Register notice outlining the new rules notes they are "substantially the same as those proposed" on April 24, 2006, which preceded our August 2006 report. Moreover, the new rule itself does not include results from a formal study of acquiring steady dollar value of crude oil for SPR over the long term, as we recommended in our report and to which DOE agreed; nor does the new rulemaking procedure include formal procedures or a mechanism for providing such flexibility in acquiring crude oil to fill the reserve.

Question 2. In your view, has the government fully considered the macro level market impact it has by taking oil off the market regardless of its price?

Answer. GAO has not conducted any formal analysis to determine whether filling the SPR, at a volume of 70,000 barrels per day, has any impact on crude oil prices. However, if DOE acquired a steady dollar value—rather than a steady volume—of oil over time, this "dollar-cost-averaging" approach would allow DOE to acquire

more oil when prices are low and less when prices are high. Implementing dollar-cost-averaging means that DOE would put less oil in the SPR during times of tight supply and demand.

Question 3. Does the Energy Policy Act or any other legislation require that the Department of Energy to continuously fill the SPR regardless of circumstances or must it consider the economic and consumer impacts of such decisions?

Answer. The legislation governing the Department of Energy's responsibility to fill the SPR does not mandate that it continuously fill the SPR regardless of circumstances. The general statement of intent in section Sec. 301(e)(1) of the Energy Policy Act of 2005 (EPACT 2005) requires the Secretary of Energy to fill the reserve as expeditiously as "practicable," without incurring excessive cost or appreciably affecting the price of petroleum products to consumers. The Act also specifically directs the Secretary to develop procedures to acquire petroleum for the SPR that, among other things, take into account the need to minimize costs to the Department of Interior and the Department of Energy in acquiring petroleum products (including foregone revenues from the royaltyin-kind program) as well as the need to maximize overall domestic supply of crude oil and to protect national security. Sec. 301(e)(2)(A).

Question 4. Are there not certain conditions in the Energy Policy Act of 2005 that would require a suspension of the fill?

Answer. Yes. The Energy Policy Act of 2005 requires that the Secretary not fill the SPR if he determines that doing so would incur "excessive" cost to the government or would "appreciably" affect the price of petroleum products to consumers. Sec. 301(e). However, this language vests discretion in the Secretary to determine the meaning of these terms.

RESPONSES OF FRANK A. VERRASTRO TO QUESTIONS FROM SENATOR DOMENICI

Question 1. Given that the proposed increased fill rates of the SPR account for between one quarter and one third of one percent of U.S. demand for oil, and between one sixteenth and one ninth percent of world demand for oil, would any change in fill policy have a small effect on price?

Some have argued that there is a very small amount of relatively light, sweet oil that is not under contract and therefore freely traded on the global markets—and as a result, the impact of our small purchase is magnified. Seems that this argument either exaggerates the scarcity of this oil, or it assumes that the markets will not account for our very transparent, stable, and relatively small acquisition plans. Your thoughts?

Answer. As indicated in my testimony, while I understand the arithmetic of calculations that attempt to derive a particular price impact by simply dividing the volume of oil being used to fill the reserve by the total number of barrels imported or consumed by the US, or globally, I don't believe that is an accurate gauge of impact. The price of oil in an open market is set on the margin, and if there are more buyers than sellers, prices will be bid up, regardless of the size of global demand.

A more accurate assessment would have to consider the SPR volumes in terms of global balances. If the market is deemed to be undersupplied—as the administration continues to maintain—then removing barrels will necessarily cause prices to rise, since price is ultimately the final allocator. Recent analysis presented by the Energy Information Administration (EIA) concurs with this judgment, although their calculation suggests the impact is only a few dollars per barrel, while I believe the impact to be greater.

In terms of rationale for this approach, I would suggest that when oil is released from the reserve, we tend to both determine the size of the release as well as measure the "relief" it provides by comparing that volume to the perceived size of the global shortfall (i.e., the marginal barrels deemed to be missing) rather than total global consumption. Consequently, whether oil is being added to the market or taken away, the correct reference point should be the amount of the "gap" rather than total global supply or demand.

With respect to your second question on volumes of light, sweet crude, I would reiterate my earlier points about supply and demand for the incremental barrels on the margin and conclude that if the buyers outnumber the sellers, then yes, the magnitude of the price impact could well be exaggerated. I also agree that the markets will account for this imbalance, and that the reaction will be an adjustment in price.

Question 2. Given that most observers feel that high oil prices are likely to persist, and with some suggesting that the world has entered into a new age of high

prices, is it likely that there will be a better time to fill the SPR in the near term? When might such time occur?

Answer. Senator Domenici, as you correctly pointed out in your remarks at the hearing, price forecasts and forecasters are frequently wrong, so I answer this question with both humility and some trepidation. Having said that, however, in an attempt to be responsive, I do believe that there are more than "fundamentals" at work with respect to the current price run up. With the economy and dollar decline, investors are increasingly looking to commodities as a better place to park their money. And, again, as indicated in my remarks, I believe the administration's steadfast determination to continue to withdraw oil from the (admittedly tight) market (and give no indication of considering putting SPR oil into the market) is in fact emboldening investors to push prices higher.

I do believe, however, that reduced seasonal demand in the second quarter, coupled with rising global inventories may provide some price relief over the next few weeks/months—assuming OPEC does not act to restrict production in the face of growing stock levels. There is also data to suggest that if additional supplies come on as scheduled later this year and demand is dampened by sustained high prices, we could very well see a small surplus and lower prices in 2009. This would allow global spare capacity to grow and serve as a price buffer for geopolitical concerns or supply interruptions.

Question 3. In your opinion, to what extent and what rate will the increased automobile economy standard and other provisions of the Energy Impendence and Security Act of 2007 reduce oil consumption and will this eliminate the need for an expanded SPR?

Answer. The most recent revision of EIA's Annual Energy Outlook (AEO2008) forecasts both a reduction in the growth of U.S. net liquids demand and an increase in domestic supply. The reduction is tied to higher prices, alternative fuels availability and efficiency improvements. That same analysis suggests that U.S import dependence will decline from some 60% today to just over 50% by 2022, then rising to 54% by 2030.

Plans are already in place to expand the reserve from 700 million barrels to 1 billion barrels. The question, I believe, is whether that expansion should grow to 1.5 billion barrels. Given the limitations on drawdown volumes and considerations about the expansion of domestic refining capacity and the changing fuel mix (due to mandates for alternatives and the prospects for adopting carbon constraints), I believe that a reassessment of the role, size, composition and use of the strategic reserve is in order.

Question 4. In your opinion is the U.S. dependence on foreign oil increasing? If so, how can the U.S. increase its energy security needs without increasing the size of the SPR?

Answer. As indicated above, the most recent projections prepared by the EIA forecast a reduction in oil import dependence over time. There are, however, a number of ways for the U.S. to enhance its energy security and these include: reducing oil demand through conservation and improved fuel efficiency; diversifying our fuel choices and suppliers; enhancing infrastructure; promoting technology improvements, including accelerating deployment of promising technologies; and better managing global geopolitics in an interdependent world.

The SPR is a cornerstone of that security strategy and will continue to serve that vital purpose. But in a changing world, we should constantly look for additional and better ways to improve that security. When one looks at the projected expenditures needed to acquire an additional 800 million barrels of oil (to bring the SPR volumes up to 1.5 billion barrels), we should consider how those monies might be better spent (e.g., on alternative fuels, infrastructure support, technology development, pilot programs, efficiency initiatives, etc.,) to enhance our security.

Question 5. Are there any benefits to having a refined product reserve? If so, would it be more or less expensive to manage then the SPR?

Answer. The original EPCA provisions governing the creation of the SPR addressed both crude oil and refined product requirements. Studies conducted at the time concluded that, among other things, given the robust state of the domestic refining industry and the small volume of product imports, it was more prudent and cost effective to develop a centrally located crude reserve rather than multiple product storage sites.

I am not an advocate for a government operated refined product reserve, but as indicated above, believe that a reassessment of reserve needs should be undertaken. Factors such as the level of product imports, available refining capacity, the changing fuel mix and prospects for more frequent and high intensity storms entering the gulf coast and disrupting process operations and supply lines should all be factored in that assessment.

I would also note that prior to the introduction of "just in time" inventory practices, U.S. refiners maintained larger product inventories to ensure consumers were adequately supplied. In the absence of significant refinery expansion in the US, an alternative to a refined product reserve might be to incentivize refiners and terminal operators to hold nominally larger stocks (1%) in proportion to their particular fuel mix. They would control these inventories and turn them over consistent with normal stock management practices.

It is worth noting that in the aftermath of hurricanes Katrina and Rita in 2005, the significant loss of domestic refinery capacity in the gulf coast somewhat negated the value of a crude only reserve and that the greatest source of relief came from the release of global product stocks.

RESPONSES OF FRANK A. VERRASTRO TO QUESTIONS FROM SENATOR DORGAN

Question 1. Does the Energy Policy Act or any other legislation require that the Department of Energy to continuously fill the SPR regardless of circumstances or must it consider the economic and consumer impacts of such decisions?

Answer. The Energy Policy Act of 2005, in section 301 (e)(1), states that . . . "the Secretary shall, as expeditiously as practicable, without incurring excessive cost or appreciably affecting the price of petroleum products to consumers, acquire petroleum in quantities sufficient to fill the SPR to the 1 billion barrel capacity authorized under section 154(a) of EPCA . . ." The language in this section of the Energy Policy Act explicitly directs the Department of Energy to consider economic and consumer impacts of filling the SPR.

Question 2. Are there not certain conditions in the Energy Policy Act of 2005 that would require a suspension of the fill?

Answer. Other than the conditional language of section 301, referenced above, which directs the Secretary to expeditiously fill the SPR ". . . without incurring or excessive cost or appreciably affecting the price of petroleum products to consumers . . ." I am unaware of any other provisions that would require suspension of such activity. The Secretary is required to consider the economic and consumer impacts of filling the SPR, but if he completes such an analysis and concludes that the impacts and costs are not "excessive" or that the fill is not "appreciably" affecting oil prices, it would appear that he has the discretion to continue.

RESPONSES OF MELANIE A. KENDERDINE TO QUESTIONS FROM SENATOR DOMENICI

Question 1. In your testimony you indicate that IEA countries can rely on privately owned stocks and government controlled stocks to meet their 90 day import protection requirement. The U.S. has 57 days of protection with government stocks and 118 days with government and commercial stock. Over the past several months, commercial stocks of crude oil and petroleum products have declined. Given that commercial stocks will respond to market signals and inventory management strategies, is it possible, or even likely, that these stocks might be low in times of a disruption?

Answer. Private stocks may increase or decrease in times of disruption, depending on whether the market is backwardated or in contango when the disruption occurs. Regardless, the US is an IEA signatory nation and is in compliance with IEA's 90 day import protection requirement based on the IEA definition.

Further, it should be noted that DOE cites the IEA 90 day requirement as a justification for continuing to fill the SPR with RIK oil at the same time it apparently rejects the IEA definition that allows countries to count public and private inventories, in effect "cherry-picking" the 90 day requirement. If the USG believes that private stocks are unreliable measures of import protection, it should approach the IEA about changing the definition. As near as I know, the USG has not done so and continues to participate in the IEA under these conditions. Unless and until the US indicates we need to re-visit this requirement, the US is in compliance and in fact substantially exceeds the 90 day requirement.

Finally, as noted in my written testimony, the drawdown capacity of the SPR of 4.4 million barrels per day is a boundary condition that physically limits as well as extends the amount of import protection of the Reserve. This suggests that we need a much more sophisticated approach to SPR policy than a reliance on a simple measure of "days of import protection" that does not accommodate the infrastructure and product mix limitations and capacity of the SPR.

Question 2. As imports rise faster than the SPR fill rate, isn't it inevitable that the number of days of import replacement that the SPR can provide will decline?

Answer. As I understand it, fill rate is not the denominator in this equation; total capacity over total daily consumption of imports is the calculation for days of import

protection. Further, the remaining 27 million barrels of capacity in the SPR would supply roughly two days of total import protection at today's rate of consumption. Total capacity and drawdown rate are more important indicators for determining the import insurance provided by the Reserve.

Question 3. Would there be an advantage to having a refined product Strategic Petroleum Reserve? If so how?

Answer. As I noted in my testimony, given the increase in product imports, the increasing reliance of US markets on this imported product, and the amount of time it takes to move refined product to high demand areas where there is a shortage (10 days to two weeks), we should re-visit the issue of refined product reserves. Without benefit of a sophisticated analysis of need, I would expect that there would need to be several regional locations.

Question 4. During the next 25 years, can government actions to reduce oil consumption feasibly eliminate the need for a larger SPR and still meet the nation's IEA stockpile commitment?

Answer. The most effective way to increase the days of import protection provided by the SPR is to dramatically increase the mpg of the US vehicle fleet and shift away from petroleum based transportation fuels. Congress made progress in that regard recently but there are much greater efficiencies to be gained in this arena. Corn ethanol displaces some oil imports but its energy balance is fairly marginal and legal mandates are already forcing competition between fuel and food and could place pressure on available arable land and conservation areas. Cellulosic ethanol offers another avenue for reducing oil demand but the DOE roadmap for research in this arena has roughly a 25 year time window for large-scale market penetration.

RESPONSES OF MELANIE A. KENDERDINE TO QUESTIONS FROM SENATOR DORGAN

Question 1. I am interested in the market signal sent by filling the SPR. Is there historical evidence that suggests an announcement or implementation of a sale of oil from the SPR has caused the market price of oil to decline, even if only on a short-term basis?

Answer. This question is answered by the following graph* which plots significant SPR actions—two sales and one exchange—against nominal oil prices over time. As demonstrated in this graph, the use of the SPR had an impact on price although it is difficult to isolate use of the SPR as the sole reason for such declines. There is however a substantial correlation between price declines and decisions to use the SPR.

Question 2. Based on your knowledge and experience with the SPR program, what would happen today if we decided to suspend filling the SPR during this time of high prices and tight world markets?

Answer. Depending on the timing of such an announcement, there could be a noticeable impact on price. The psychological impacts on prices when the USG sends a signal to the marketplace that it is prepared to act can be substantial, particularly when oil prices such as those we see today are not reflective of market fundamentals. The impact would be greater if the action was not telegraphed in advance but was instead timed to have maximum impact based on market conditions.

Question 3. Is filling the SPR with $90 or $100 dollar barrel of oil the best use of taxpayer dollars to reduce dependence on foreign oil? Are there other ways that would be a better investment at this point in time in order to improve our long-term economic and national security circumstances of the U.S.?

Answer. There is virtually no upside to filling the SPR with oil at these prices and considerable downside. The energy security implications are negligible and again, bounded by the drawdown rate of the SPR, not its total capacity.

The value of the oil to fill the remaining capacity of the SPR is around $3 billion. As I noted in my testimony, GAO indicates that in real dollars, DOE energy research investment has declined by 85% over the last twenty years. This trajectory is deeply disturbing in view of the enormous energy challenges we are facing today. Given the extremely marginal security value of filling the SPR to capacity, a better investment of scarce resources might be in developing technologies that would ultimately diminish or eliminate the need for an SPR, including: highly efficient vehicles such as plug-in hybrids; unconventional natural gas and carbon capture and sequestration technologies that would enable us to generate carbon-light electricity to enable widespread use of cleaner plug-in hybrids while mitigating climate change; cellulosic ethanol and other sustainable fuels, and; other clean or carbon-free sources of energy for power generation.

---

*Graph has been retained in committee files.

Question 4. Does the Energy Policy Act or any other legislation require that the Department of Energy to continuously fill the SPR regardless of circumstances or must it consider the economic and consumer impacts of such decisions?

Answer. The Energy Policy Act provides DOE with significant latitude as to when and how it decides to fill the remaining capacity in the SPR, including consideration of market conditions and price impacts. Former Secretaries of Energy, both Republicans and Democrats, have suspended the RIK program out of concern such actions might place pressure on oil prices in tight markets. Apparently, the current SOE disagrees with the conclusions of Secretaries Abraham and Richardson.

Question 5. Are there not certain conditions in the Energy Policy Act of 2005 that would require a suspension of the fill?

Answer. According to EPACT 2005, these are the factors DOE is supposed to consider as it develops the ways and means to fill the SPR to capacity and expand it to one billion barrels. I have inserted comments after the legal factors articulated in EPACT 2005 as follow:

(1) maximize overall domestic supply of crude oil (including quantities stored in private sector inventories)

- Filling the SPR to capacity at this time could affect private sector inventories and discourage their holding.

(2) avoid incurring excessive cost or appreciably affecting the price of petroleum products to consumers'

- As noted, other Secretaries of Energy have had concerns about the appreciable impacts on price from filling the SPR with RIK oil and suspended the program accordingly based on a review of market conditions.

(3) minimize the costs to the Department of the Interior and the Department of Energy in acquiring such petroleum products (including foregone revenues to the Treasury when petroleum products for the Reserve are obtained through the royalty-in-kind program)

- At today's prices, the foregone revenues to the Treasury from continuing the RIK program are substantial.
- Also, GAO has indicated that the current "steady volume approach of the RIK program" has effectively cost the taxpayer an additional $590 million for the same amount of oil.

(4) protect national security

- As I have noted, the national security impacts of filling the existing SPR to its full capacity are highly negligible

(5) avoid adversely affecting current and futures prices, supplies, and inventories of oil

- Putting small amounts of oil onto the market, for example when the Clinton Administration exchanged 30 million barrels of oil (in a 3 B barrel annual market), spot prices dropped almost 20%, from $37.22 to $30.26 a week later. Prices stayed down until the bombing of the Cole on October 12. Further, this action ultimately netted over 35 million barrels of oil returned to the Reserve, a clear and positive impact on inventories of oil. Consideration of market conditions, unlike today's policy of filling without such consideration, enables the converse of this factor; positive impacts on current and future prices, supplies and inventories of oil.

(6) address other factors that the Secretary determines to be appropriate.

- I cannot comment on what other factors have been deemed appropriate by the SOE.

RESPONSES OF KATHARINE FREDRIKSEN TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. Could you tell us how the 4.4 million barrel per day maximum drawdown rate will increase as a result of the 1-billion-barrel expansion?

Answer. The SPR Expansion to 1.0 billion barrels will increase the maximum drawdown rate from 4.4 million barrels per day to approximately 6.0 million barrels per day. The expansion sites will increase the drawdown rate by 485,000 barrels per day and the new site will increase the drawdown rate by 1,000,000 barrels per day.

Distribution system	Storage Facility	Current 700 million		Expansion to 1 Billion	
		Storage (MMB)	Drawdown (MB/D)	Storage (MMB)	Downtown (MB/D)
Seaway	Bryan Mound	254	1,500	254	1,500
Texoma	West Hackberry	227	1,300	227	1,300
	Big HUI	170	1,100	250	1,500
Capline	Bayou Choctaw	76	616	109	600
	Richton (Hew)	—	—	160	1,000
Total Program		727	4,415	1,000	5,000

Question 2. EPAct directs DOE to: "as expeditiously as possible, without incurring excessive cost or appreciably affecting the price of petroleum products to consumers, acquire petroleum in quantities sufficient to fill the Strategic Petroleum Reserve to the 1 billion barrel capacity." Is it DOE's interpretation that this EPAct direction legally obligates the Department to fill the SPR? Is this the reason that they are currently filling the SPR?

Answer. DOE does not interpret EPAct as directing obligatory fill of the Strategic Petroleum Reserve without regard to price. Rather DOE seeks to conduct a petroleum acquisition program that complies with the guidelines enumerated in EPAct Section 301(c) to: (1) maximize overall domestic supply of crude oil; (2) avoid incurring excessive cost or appreciably affecting the price of petroleum products to consumers; (3) minimize the costs to the Department of the Interior and DOE in acquiring such petroleum products; (4) protect national security; (5) avoid adversely affecting current and futures prices, supplies, and inventories of oil; and, (6) address other factors that the Secretary determines to be appropriate. The published Procedures for the Acquisition of Petroleum for the SPR (71 FR 65376, 11/8/06) are consistent with these objectives.

The current royalty-in-kind program, which is fully in compliance with these guidelines, was initiated pursuant to the Administration's policy set forth in the President's January 2007 State of the Union message to Congress to fill and expand the Reserve to 1.5 billion barrels.

Question 3a. In its latest Emergency Response Review of the United States, the IEA recommends that the U.S. take several steps to enhance its energy security and ability to respond to emergency situations. The Administration clearly would like to increase the amount of crude oil that we hold in the SPR, but has any thought been given to the other IEA recommendations, including:

- Developing demand restraint measures;
- Establishing product reserves; or
- Requiring private industry to meet minimum inventory requirements.

Answer. Demand Restraint Measures—The U.S. has considered demand restraint measures in the past and decided against using them as an oil disruption response measure. During disruptions, the key concern will be economic damage. The U.S. has long maintained that the best response to a severe supply disruption is to add supply through drawdown of the SPR and cooperation with the IEA. Working within the market by adding supply, and allowing prices to provide important market signals, minimizes the impact on the economy. Administrative demand restraint measures entail government interference in the market and can themselves result in adverse economic impacts. The U.S. will use additional stockdraw, if necessary, during an IEA response action, rather than impose administrative demand restraint on an already-suffering economy.

Product Reserves—The U.S. has considered product reserves in the past, each time deciding that the best response measure for the U.S. would be crude oil stored near refining centers. We have informed the IEA of our views on this issue at various times over the years.

Private Industry Requirements—As to private industry inventory requirements, again, the U.S. believes that a government-owned, government-controlled crude oil reserve provides the best option for mitigating the economic impacts of an oil supply

interruption. Imposing a stocks requirement on industry would increase industry costs, increasing costs to the American consumer—without the sort of certainty of stock use in an emergency that is provided by the SPR.

Question 3b. This Administration has departed from the standing SPR policy that, in the case of a supply disruption, SPR oil should be drawn down early and in large volumes. Could you explain to us why the Administration decided to change this policy? And could you explain the criteria that the Administration uses when determining its SPR fill and drawdown policies? For instance, what circumstance might prompt the Administration to stop its current fill? And, what circumstance might prompt a drawdown? Is the policy different depending on whether the disruption is weather-related or geopolitically-based?

Answer. The Administration has consistently followed relevant provisions of law to manage the SPR in a manner that limits use to cases of severe physical disruption to oil supply. The Administration has also consistently resisted calls to use the SPR to impose short-term effects on a normally-operating global oil market, as 1) any effects would be transient, expiring once an SPR draw down were halted; and 2) any reduction in long-term energy and economic security as the result of a non-emergency draw down would run against the very purpose of maintaining the SPR, and the intent of policymakers over the past 30 years who established this important national security asset.

The Energy Policy Act of 2005 (EPAct 2005 requires acquisition of petroleum to fill the Strategic Petroleum Reserve to its authorized one billion barrel capacity "as expeditiously as practical without incurring excessive costs or appreciably affecting the price of petroleum products to consumers"; and directs the Secretary of Energy to promulgate procedures for the acquisition of petroleum for the Reserve.

Section 301(c) of EPAct 2005 directs that the acquisition procedures:

1. Maximize overall domestic supply of crude oil;
2. Avoid incurring excessive cost or appreciably affecting the price of petroleum products to consumers;
3. Minimize the costs to the Department of the Interior and the Department of Energy in acquiring such petroleum products;
4. Protect national security;
5. Avoid adversely affecting current and future prices, supplies, and inventories of oil; and,
6. Address other factors the Secretary determines to be appropriate.

After consideration of public comments, the Department of Energy promulgated Procedures for the Acquisition of Petroleum for the Strategic Petroleum Reserve (10 CFR 626), effective December 8, 2006.

The Procedures establish the rules and procedures for acquisition of SPR crude oil by direct purchase or royalty-in-kind (RIK) transfer. The Procedures require a complete market analysis be performed prior to any oil fill activities to ensure that Strategic Petroleum Reserve acquisition activities will not unduly affect current market conditions adversely. Since the beginning of 2007, three separate market assessments have been performed prior to initiating activities to attempt acquisition by direct purchase and for the two RIK exchange cycles.

Question 4. Other witnesses testified that the Administration's current SPR fill is affecting market psychology, which is pushing prices upward in a manner that cannot be captured by modeling or economic analysis. I understand that DOE believes that the current SPR fill is too small to affect world oil prices in a manner than can be modeled. However, I would like you to comment on the relationship between current SPR policy and market psychology, and whether the Department has taken these non-quantitative variables into account in its decision-making on this issue.

Answer. Market psychology is indeed an important factor in short-term crude oil price movements. However, price movements driven by, or perhaps more accurately exaggerated by, the psychology of market participants are very short lived if not associated with significant impacts on market fundamentals. When it is made public that the Department of Energy may acquire crude oil for the SPR, it is possible, all else equal, that there will be a notable market response. However, as we have seen in the past, any market reaction is very short lived (1 or 2 days). The transparency of the fill program, small quantity involved, and deliberate pace of crude acquisition by the Department of Energy allows the world crude oil market ample time to adjust. Ultimately any price impact is proportionate to the net quantity of oil that is being removed from world markets, following adjustments by both consumers and producers. Considerations such as these are part of the market assessment that is conducted by the Department of Energy prior to engaging in acquisition activities.

RESPONSES OF KATHARINE FREDRIKSEN TO QUESTIONS FROM SENATOR DOMENICI

Question 1. With the U.S. consumption of oil increasing, domestic production falling, and net imports rising to over 12 million barrels per day in 2007, is it fair to say that U.S. dependence on the world petroleum market in relation to our own domestic supply is growing?

Answer. Total consumption of liquid fuels is projected to grow from 20.7 million barrels per day in 2006 to 22.8 million barrels per day in 2030. While U.S. crude oil production increases from 5.1 million barrels per day in 2006 to 5.6 million barrels per day in 2030, total domestic U.S. liquids supply, including crude oil, natural gas plant liquids, refinery processing gains, and other refinery inputs (e.g., ethanol, biodiesel, biomass to liquids, and liquids from coal) grows from 8.3 million barrels per day in 2006 to 10.4 million barrels per day in 2030.

The difference between consumption and production is made up by imports. Total liquid net imports are projected to remain roughly constant at 12.4 million barrels per day between 2006 and 2030 in the AEO2008 reference case, so the net import share of total liquids supplied, including crude oil and refined products, drops from 60 percent in 2006 to less than 51 percent in 2022, and then increases to 54 percent in 2030—lower than today's share.

Question 2. In light of threats to oil supply from Nigeria, Iran, Venezuela and other countries, physical limits to surging world oil in response to a disruption, and a variety of other factors, what level of import protection can the SPR can offer us currently? What is a reasonable level that we should expect?

Answer. The current SPR inventory of 701 million barrels affords the Nation 56 days of net import protection. The SPR plans to increase its inventory to 727 million barrels, providing 63 days of protection in 2009.

The SPR has a maximum drawdown capability of 4.4 million barrels per day which can replace approximately 45% of current crude oil imports for a 90-day period, and the entire Reserve can be drawn in 180 days in response to a severe energy supply interruption. The drawdown can be sustained at lower rates for a much longer period.

However, it is unlikely that a severe energy supply interruption will result in a 100% cutoff of imports. In addition, through our membership in the International Energy Agency, we participate in coordinated response measures to global supply disruptions.

The Administration strongly believes, in light of the significant U.S. petroleum consumption, and a doubling of imports over the past 30 years, it is vital to expand the SPR to 1.5 billion barrels.

Question 3a. In the case of a physical disruption to supply because of a storm, or a conflict in a major producer, or a terrorist attack on infrastructure—what are our real options for protecting our economy?

Answer. The Strategic Petroleum Reserve (SPR) was established by the Energy Policy and Conservation Act to specifically address potential physical interruptions to petroleum supplies. The U.S. SPR and the petroleum stockpiles of the other IEA member countries provide important insurance policies against possible energy supply interruptions.

Question 3b. In the case of a physical disruption to supply because of a storm, or a conflict in a major producer, or a terrorist attack on infrastructure—is there realistically any extra oil in the market to offset a significant disruption, other than the SPR?

Answer. The oil market's ability to respond to a supply disruption will depend upon the size of the disruption. Disruptions that are short-lived or small are generally met by stock draws. Oil inventories have been building, and U.S. stocks of crude oil and petroleum products are now back in the middle of their average range. Petroleum inventories in the other Organization for Economic Cooperation and Development countries as a group have not built as much, but are projected to reach their 5-year average by the end of 2008.

Larger oil market disruptions could be offset to some extent by the use of surplus production capacity, which is held primarily in Saudi Arabia. Global surplus capacity is currently low by historical standards at an estimated 1.5 million barrels per day for the first quarter of 2008. This surplus capacity is projected to increase to 2.2 million barrels per day by the end of 2008, and rise further to an average of 3.6 million barrels per day in 2009 because of increases in capacity in Saudi Arabia and other OPEC countries, as well as a large increase in non-OPEC production in 2009.

Question 4. What is the United States obligation as a Member Country of the IEA? How does the U.S. fulfill its obligation?

Answer. The United States, under the 1974 Agreement on an International Energy Program (the Charter of the IEA), is required to:

- hold emergency oil stocks equivalent to at least 90 days of net oil imports;
- Release stocks, restrain demand, and switch to other fuels, increase domestic production, or share available oil, if necessary, in the event of a major supply disruption.

The IEA Agreement carries the commitment and status of a U.S. Treaty.

The United States currently satisfies its IEA obligations to provide 90 days of net import coverage through a combination of SPR and commercial stocks. The SPR currently provides 56 days of import protection and the remaining portion is satisfied through industry stocks.

Question 5. How does the United States compare to other LEA Member countries' stockholding requirements?

Answer. All members of the IEA are required to maintain stocks equivalent to 90 days of net petroleum imports. The IEA members can meet their obligations through reserves held by government or industry. The U.S. obligation of maintaining 90 days of oil import protection does not differ from other IEA members; however unlike many IEA members, the U.S. does not impose a stockholding requirement on industry.

As of July 2007, there were no IEA member countries below the 90-day minimum stockholding requirement. IEA members utilize three methods for holding stocks: placing a stockholding requirement on industry (20 countries); government-owned stocks (7 countries); and agency stocks (11 countries). Agency stockholding entities can take various forms, some being government-sponsored, some being industry-created, but all under some form of government control during emergencies. Many countries opt for a combination of these stockholding methods. For example, two countries, Japan and Korea, which are nearly 100% dependent on petroleum imports, maintain stocks far in excess of the 90-day requirement by utilizing both government stocks and mandatory requirements on industry. Japan has a Government reserve of 77 days and requires its industry to hold an additional 70 days, and Korea has a Government reserve of 70 days and requires its industry to hold an additional 40 days.

Question 6. Import protection is essential for our energy security. Since there is not a mandatory requirement on industry to hold a minimum number of days of commercial stock, what is its incentive to continue to hold surplus inventories during times of high crude oil prices? How will this effect our obligation to the IEA and import protection during an energy supply disruption?

Answer. Trends in commercial inventories are driven almost entirely by the economics of holding stocks. This often has less to do with the absolute price of crude and is more associated with forward prices on futures markets. When futures prices are in 'contango', the prices on the futures markets are increasing into the out months. This pricing structure creates an economic incentive to hold physical stocks. A refining company can buy and hold the physical stocks and sell futures contracts to lock in a profit. Conversely, when futures prices are in 'backwardation', the prices on futures market are decreasing into the out months. This pricing structure creates an economic disincentive to hold physical stocks. Under these conditions, a refining company can sell physical stocks on hand and buy futures contracts at a lower price to lock in a price and profit.

The West Texas Intermediate (WTI) contract on the NYMEX flipped from a contango market to a backwardated market in early 2007. The shape of the forward price curve is primarily determined by global crude oil market fundamentals. In this most recent case, it was successive OPEC production cuts aimed at reducing OECD stock levels that caused the price curve to flip. When the market changes occur and our domestic refining industry changes its stock holding patterns, the change in commercial stock levels in the U.S. can change substantially. Over a period of prolonged backwardation, the number of days of import protection provided by our commercial stocks can decline by as much as five or six days compared to inventory holdings when contango patters prevail.

Question 7. To what extent and at what rate will the increased automobile fuel economy standard and other provisions of the Energy Independence and Security Act of 2007 reduce U.S. growth in projected oil imports?

Answer. The specific EISA2007 provisions that are modeled in the Annual Energy Outlook 2008 include the renewable fuel standard (RFS), the new corporate average fuel economy (CAFE) standard for new light-duty vehicles, new appliance energy efficiency standards, new lighting energy efficiency standards, provisions to reduce energy consumption in Federal buildings, and new industrial electric motor efficiency standards. Compared to the projections contained in the Annual Energy Outlook

2007 (AE02007), the combined effect of the EISA2007 provisions is a 11.6 percent reduction in total U.S. delivered energy demand by 2030, a reduction of 11.2 quads. The majority of the petroleum savings realized from EISA2007 are due to increased CAFE standards for light duty vehicles and the RFS. The combined effect of the RFS and CAFE is a 15.4 percent reduction in petroleum demand by 2030, which equates to a reduction of 4.1 million barrels per day compared with AE02007. The reduction in petroleum consumption translates into lower imports; the decline in net imports (including crude oil and petroleum products) 4.0 million barrels per day, or 24.7 percent, resulting in imports of 12.3 million barrels per day by 2030.

Question 8. What is the most effective way of acquiring oil for the SPR? And, why?

Answer. We feel that the key to minimizing our impact on markets and on consumers is to fill steadily and at modest predictable rates. This fill policy allows industry to have clear expectations of our fill activities and it allows our fill plans to be built into mid-range market fundaments, thus avoiding surprises that could shock the market.

RESPONSES OF KATHARINE FREDRIKSEN TO QUESTIONS FROM SENATOR DORGAN

Question 1. The Energy Policy Act of 2005 provides guidance to expand the Strategic Petroleum Reserve (SPR) to the level of 1 billion barrels but only "without incurring excessive cost or appreciably affecting the price of petroleum products to consumers." The Department of Energy has said it conducts economic analysis on whether filling the SPR would impact the price of petroleum and did so before the recent RIK contracts.

- Can you provide more detail about how the Department performs this market analysis?
- Was the analysis peer-reviewed?
- Is the analysis available to the public, such as the web site or other means?
- Have you made this available to policy makers and other parties?

Answer. Prior to engaging in activities to acquire crude oil for the Strategic Petroleum Reserve, the Office of Petroleum Reserves conducts an assessment of market conditions to evaluate the potential for impacts on crude oil markets. Several market indicators are examined in these assessments including stock levels, spot and futures prices, market fundaments, and energy security policy. The most recent market assessment was conducted in February 2008 and is currently being reviewed by Department officials, having been informally peer reviewed by staff at the Energy Information Administration. However, EIA was not asked to comment on or evaluate the policy recommendations contained within the document. These assessments are not published on the internet, but they have been transmitted to the Congress.

Question 2. Secretary Bodman stated to me and other Senators in a letter dated Jan. 8, 2008, that one of the reasons to increase the capacity of the SPR is that it only contains 57 days of import protection. However, your own web site said that the U.S. has 118 days of public and private strategic stocks for import protection. The requirement to meet U.S. treaty obligations with the International Energy Agency (IEA) is for 90 days of import protection. Why is the Department telling U.S. policy makers that we need to fill the SPR for import protection and telling the international community that we are currently meeting our treaty obligations for import protection? How can you justify the juxtaposition?

Answer. Under the International Energy Program, member countries are permitted to meet their stockholding obligations for 90 days of net petroleum imports through the combination of both Government and private stocks. Since 1988, the U.S. has relied on commercial industry stocks. (Currently, the U.S. relies on industry stocks to make up more than one-third of its obligation.)

While private inventories help satisfy the U.S. obligation to the IEA, such commercial stocks are not under government control; it is the position of this Administration that the nation's long-term energy and economic security requires a gradual expansion of the SPR, in order to ensure that government-controlled inventories are adequate in light of a doubling of imports over the past 30 years.

Question 3. The Administration has asked Congress for funding in FY 09 to expand the SPR to the 1.5 billion level. In my estimate, it could cost more than $80 billion at today's oil prices to build the facilities and fill to that level. This will require a national commitment through 2029 to get to that level under the Bush Administration's plan. At the same time, even with the passage of the 2005 and 2007 Energy Bills, there has been no major increase in funding requests for the energy programs. How does the Administration respond to its policy efforts to put the SPR

fill on autopilot without consideration of cost and at the same time, it will not make the same commitment for energy programs?

Answer. The Administration strongly believes that SPR expansion, although costly, is necessary to protect the economic and energy security of the Nation, given the increased risk of disruption in the global oil market. The SPR is our only guaranteed source of additional oil in the case of a severe energy supply disruption.

The Administration has proposed strong energy programs to reduce dependence on imported oil, including the Twenty in Ten proposal to reduce future gasoline demand, substantially enacted in the EISA07, tax credit support for renewable and alternative fuels to displace imported oil, and the Advanced Energy Initiative to foster development of replacement energy forms and technologies to make America less dependent on fuel imports.

Question 4. On December 11, 2007, Dr. Philip Verleger testified before a joint Energy and Homeland-Government Affairs Subcommittee hearing that filling the SPR, especially with light sweet crude, is putting upward pressure on the price of a barrel of petroleum. In fact, he stated that removing even small supplies of this highly-valuable crude oil could have raised the overall price of oil as much as $10 per barrel.

- Explain to me how and why your analysis differs from Dr. Verleger's?
- Does the Department's analysis show a price threshold for a barrel of oil that would stop you from filling because it is impacting the economy?

Answer. The Department of Energy strongly rejects the assumptions and conclusions set forth in Dr. Verleger's December 11, 2007, testimony. His analysis was closely examined by DOE and it was found to not be supported by observed market data or by traditional economic theory. A lengthy briefing was given to several Energy and Natural Resources Committee staff in January 2008 detailing the position of the Department of Energy on this matter. We would be happy to provide these briefing materials to you for your review.

The market assessments conducted by the Office of Petroleum Reserves do not set price thresholds for the termination or subsequent resumption of fill.

Question 5. I am also concerned about contracts for Royalty-in-Kind oil to fill the SPR. Three were recently issued to BP North America, Sunoco Logistics, and Shell Trading Company.

- Does the Department have the ability to suspend these or any future RIK oil contracts if circumstances or policy decisions change? (Yes, they do.)
- What might be the geopolitical or national circumstances where the Department would consider suspending these contracts?

Answer. The Procedures for the Acquisition of Petroleum for the Strategic Petroleum Reserve (10 CFR 626), specifically address deferrals of contractually scheduled deliveries. "Deferral" is defined as rescheduling delivery outside the original contract period. Section 626.8 provides that, in the event the market is distorted by disruption to supply or other factors, DOE may defer deliveries or entertain contractor deferral requests. Deferral requests may be granted only if DOE can receive a premium for the deferral paid in the form of additional barrels of oil. Conditions to grant a deferral request must be such that the deferral will reduce the oil acquisition cost per barrel or a supply shortage situation exists or may be imminent.

The Acquisition Procedures stipulate that DOE shall only grant a deferral request if it determines that DOE can receive a premium for the deferral paid in additional barrels of oil and, based on DOE's deferral analysis, that at least one of the following conditions exists:

(1) DOE can reduce the cost of its oil acquisition per barrel and increase the volume of oil being delivered to the SPR by means of the premium barrels required by the deferral process.

(2) DOE anticipates private inventories are approaching a point where unscheduled outages may occur.

(3) There is evidence that refineries are reducing their run rates for lack of feedstock.

(4) There is an unanticipated disruption to crude oil supply.

The Procedures require that a deferral request is granted only if the negotiation results in an agreement to give the Government a fair and reasonable share of the market value.

Question 6. Does the Energy Policy Act or any other legislation require that the Department of Energy to continuously fill the SPR regardless of circumstances or must it consider the economic and consumer impacts of such decisions?

Answer. DOE does not interpret EPAct as directing obligatory fill of the Strategic Petroleum Reserve. Rather DOE seeks to conduct a petroleum acquisition program that complies with the guidelines enumerated in EPAct to Section 301(c) to: (1) maximize overall domestic supply of crude oil; (2) avoid incurring excessive cost or appreciably affecting the price of petroleum products to consumers; (3) minimize the costs to the Department of the Interior and DOE in acquiring such petroleum products; (4) protect national security; (5) avoid adversely affecting current and futures prices, supplies, and inventories of oil; and, (6) address other factors that the Secretary determines to be appropriate. The published Procedures for the Acquisition of Petroleum for the SPR (71 FR 65376, 11/8/06) are consistent with these objectives.

The current royalty-in-kind program, which is fully in compliance with these guidelines, was initiated pursuant to the Administration's policy set forth in the President's January 2007 State of the Union address to Congress to fill and expand the Reserve to 1.5 billion barrels.

Question 7. Are there not certain conditions in the Energy Policy Act of 2005 that would require a suspension of the fill?

Answer. DOE does not interpret EPAct as directing obligatory fill of the Strategic Petroleum Reserve without regard to price. Rather DOE seeks to conduct a petroleum acquisition program that complies with the guidelines enumerated in EPAct Section 301(c) to: (1) maximize overall domestic supply of crude oil; (2) avoid incurring excessive cost or appreciably affecting the price of petroleum products to consumers; (3) minimize the costs to the Department of the Interior and DOE in acquiring such petroleum products; (4) protect national security; (5) avoid adversely affecting current and futures prices, supplies, and inventories of oil; and, (6) address other factors that the Secretary determines to be appropriate.

When acquiring petroleum, whether by purchase or royalty transfer, DOE will seek to balance the objectives of assuring adequate security and minimizing impact to the petroleum market. To this end, DOE will consider various factors that may be affecting market fundamentals and the geopolitical climate. DOE decisions on crude oil acquisition will take into consideration the current level of inventories, import dependency, the international and domestic production levels, oil acquisition by other stockpiling entities, the security value of additional storage, incipient disruptions of supply or refining capability, market volatility, the demand and supply elasticity, petroleum logistics, and any other considerations that may be pertinent, Monetary policy, the rate of economic growth, specific domestic market segments, and foreign policy considerations will also be considered. The timing of DOE entry into the market, its sustained presence, and the quantities sought will all be sensitive to these factors and their impact on U.S. energy security.

RESPONSES OF KATHARINE FREDRIKSEN TO QUESTIONS FROM SENATOR MURKOWSKI

Question 1a. I am a supporter of adding oil to SPR as quickly as economically possible. When we face threats of a supply disruption from the Venezuelan President, it only makes sense that we increase the size of our stockpile. But there is something to be said for not driving the price of oil higher at a time of record oil costs. So my questions are what are the contractual and logistical issues concerning the U.S. royalty oil with which you are filling the reserve?

Answer. The Department of the Interior (DOI) and DOE award six-month term concurrent contracts for the delivery of royalty-in-kind oil by DOI contractors to market centers and the market center receipt of those volumes by DOE contractors. Premature termination of these arrangements to ultimately deliver oil to the SPR is very complex and costly because of the number of parties involved and contracts in place, both government and contractor, including contractors' physical acquisition and market hedging contracts.

Question 1b. How much notice do you need to give to stop taking royalty oil to place in the reserve?

Answer. All DOE royalty-in-kind contracts have provisions for termination for the convenience of the Government, for which an effective date of termination can be specified by the government. However, the impact on the contractors can be significant, depending on current and future market conditions. DOE contractors may incur costs with respect to prior market hedging of their exchange liability at time of award which would have to be terminated as well as any physical barrels purchased for future delivery. Contractors may incur costs for canceling long term charter contracts (if applicable). DOE contractors may also have claims related to having to sell royalty barrels received at the market in lieu of delivery to SPR.

Question 1c. Can you switch to selling the government's 70,000 barrels from Gulf royalties relatively quickly to put slight downward pressure on prices or do you have

longer notice requirements for changing from in-kind to advertising for sale of the government's oil?

Answer. The Department of the Interior would require a 45-day lead time to make changes to the status of royalties-in-kind, either to convert to royalty paid in value or to conduct outright sales of those volumes.

Question 1d. Is it the Administration's position that 70,000 barrels per day of oil has absolutely no ability to affect prices being paid to fill the SPR?

Answer. No. The basic supply and demand principles of economics require there to be some impact on prices if you affect supply regardless of the amount of oil. However, it is the Administration's position that the quantity of oil being transferred to the SPR through the RIK program is not having an impact on markets that is disproportionate to the quantity being removed. There are several compounding market factors that could affect the relative magnitude of removing this quantity of oil from world markets; however, it is still our position that this impact is relatively small.

Question 1e. Does the Department see any need for changes to the SPR provisions that Congress approved two years ago in the Energy Policy Act of 2005?

Answer. Not at this time. The Energy Policy Act of 2005 directed the Department of Energy to expand the SPR to its authorized capacity of 1 billion barrels as expeditiously as practicable. The Administration is acting on this legislation and is fully complying with the law and the procedures for acquisition of crude oil for the SPR. It is the policy of this Administration to fill the SPR to its current capacity of 727 million barrels by the end of 2008 and then to expand and fill the Reserve to 1 billion barrels.

○